

MARCH 1953

National Safety News



1953

**ANNUAL
SAFETY
EQUIPMENT
ISSUE**



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Goggles
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Welder's Helmets



Safety Clothing

Asbestos Suits
Belts, Safety
Chemgard Aprons, Sleeves
ChemKlos
Clothing, Protective
Gloves
Knee Pads
Plastic Clothing
Rubber Clothing
Shoes, Safety

Instruments—Dusts

Cascade Impactor
Dust-Vue Microprojector
Electrostatic Sampler
Geiger Counter
Midget Impinger

Artificial Respiration Equipment

H-H Inhalator
Oxygen Therapy
Pnealator
Pneophore

Masks

Abrasive Masks
All-Service Gas Masks
Ammonia Mask
Chlorine Mask
Heat Mask
Hose Mask
Industrial Gas Masks
Tank Gauger's Masks

Instruments—Gas

Aromatic Hydrocarbon
Detector
Benzol Indicator
Carbon Monoxide Alarms,
Indicators, Recorders
Combustible Gas Alarm,
Indicator
Explosimeter
Hydrogen Sulphide
Detector
Infra-Red Liquid and Gas
Analyzer
Methane Detector
Nitrogen Dioxide Detector
Oxygen Deficiency
Indicator
Oxygen Indicator

Oxygen Breathing Apparatus

Chemox, Self-Generating
Demand Mask
McCaa 2-Hour
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Seventeenth Annual Safety Equipment Issue

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37,100 copies of this issue were printed

MARCH 1953

An Exposition in Print

THE SEVENTEENTH ANNUAL SAFETY EQUIPMENT ISSUE might be called a "safety exposition in print." In its pages you will meet the manufacturers and distributors of a wide variety of products designed to make the workplace freer from the hazards that result in personal injuries, occupational diseases, and fires.

The number of items now classified as safety equipment reflects the scope of the modern industrial safety program. Safety men no longer feel they have done their work when they put goggles on the men and guards on the machines.

There are few activities in industry which do not involve some phase of safety. When a plant is built or remodeled or new machines installed, the safety department invariably checks plans.

When improvements in lighting and ventilation are planned, the safety engineer works with specialists in those fields.

Housekeeping and sanitation, facilities for personal and plant cleanliness are basic safety problems. And the safety man is interested in the quality of the food served in the cafeteria or canteen and the conditions under which it is prepared and dispensed.

There was a time when safety men—and operating men, too—would have scoffed at the idea of painting the plant and machines in bright, cheerful colors. But industry has found that it pays in both safety and production, and brings many intangible benefits.

It would be possible to continue this outline of the safety engineer's problems and interests indefinitely. The products and services which meet these needs are described concisely in the nine sections which comprise the main part of this issue. The display advertisements and the classified section at the end of the book will provide a helpful buyers' guide.

* * *

The Equipment Issue is a concise reference work and its contents are necessarily limited to basic material of general application. The bibliographies included in each section indicate sources of more detailed information.

Publications of the National Safety Council are, naturally, prominent in these lists. Special mention should be made of the Council's *Accident Prevention Manual for Industrial Operations*, now in its second edition. It is available complete in a cloth-bound volume, or in 26 pamphlets, each dealing with some specialized phase of the safety program. This book was consulted frequently in the preparation of the equipment issue.

Periodicals are an invaluable source of information. In addition to those serving the safety field, there are many trade magazines which contain much valuable and specialized information for their industries.

And don't forget the manufacturers. Their catalogs and manuals are filled with useful engineering data as well as descriptions of the products offered.

* * *

Each year numerous revisions suggested by readers and manufacturers are incorporated in the text. Such suggestions are always welcome and the editors extend their grateful thanks.

A SAFETY INVENTORY

TAKING inventory is at least an annual job in any business. Similar techniques can be applied to a safety program, since both tangibles and intangibles can be listed and appraised. Every activity should be checked for faults and omissions.

Time out in the plant can be well spent. The regular inspectors may be doing a good job of mechanical details but the safety director is in a better position to observe the program as a whole and see how it is clicking.

Getting acquainted with the men out in the plant is not the least of the benefits. The more people a safety man knows by name, the more effective will be his efforts.

Taking a safety inventory is not snooping. It helps the supervisors do a better job of accident prevention and much of its success will depend on their friendly help.

Talks with workers—with the foreman's knowledge and approval, of course, can be revealing. Men have ideas as well as grievances and both should be welcome. When men have confidence in the safety director they will talk freely.

Here are just a few of the things to check:

PHYSICAL CONDITIONS

1. Work areas—aisles, plant traffic.
2. Light and ventilation.
3. Machine guarding—transmission and point of operation.
4. Electrical equipment—switches, power lines, etc.
5. Maintenance of equipment generally.
6. Material-handling methods and equipment.
7. Housekeeping—storage, piling, aisle lines, paint, etc.
8. Personal service facilities—washrooms, lockers, lunchrooms, parking, traffic hazards at plant entrance, etc.

PERSONAL PROTECTION

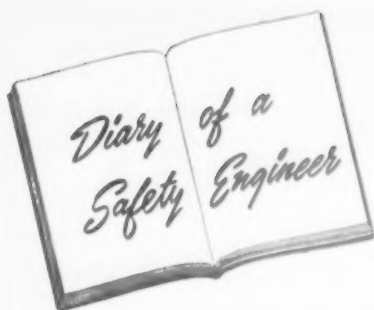
1. Stock room, methods of dispensing.
2. Instruction of new employees in use.
3. Facilities for maintenance.
4. Is it being used where needed?

TRAINING AIDS

1. Bulletin boards, appearance and condition.
2. Posters on bulletins—coverage of subjects, length of time on boards.
3. Training films, projection equipment, meeting rooms.
4. Safetygraphs, literature from outside sources.
5. The company's employee publication.

OCCUPATIONAL HYGIENE

1. Full survey of existing hazards.
2. New processes and potential hazards.
3. Presence of dusts, vapors and odors.
4. Exhaust ventilation equipment.
5. Medical and first-aid facilities, dispensary records.



Equipment and the Mind

(Fiction)

By Bill Andrews

March 6, 1953. Larson went to a big executives' meeting in Chicago recently and heard a speech by some hotshot industrial psychologist. It must have been a persuasive speech, because Larson came back wanting to talk about it. He brought it up when he dropped into my office yesterday in the course of his rounds (even though he is now president of Jackson-Barnes, Lars still tries to keep up the habit he had when he was superintendent, of cruising the plant frequently).

I happened to have a copy of the new Equipment Issue of NATIONAL SAFETY NEWS lying on my desk, and the flashing red cover caught his eye. He flicked it open, riffled a few pages. Then he shut it and said,

"This psychologist in Chicago claimed that gadgets won't stop accidents. Claimed that even training, as we know it, won't stop 'em. Said that the problem is a lot more one of attitudes and mental health than it is of equipment and environment."

He apparently expected me to rise in furious defense of traditional methods. I didn't. Instead, I replied, "The first two points I'll agree with. The third, of the relative importance of mental condition and equipment, I don't pretend to know. I don't think there's any conclusive data. I certainly rate attitudes and mental health as very important."

Lars said, "He had some data. Quoted some National Safety Council figures that showed that the great majority of accidents had personal causes—70, 80 or 90 per cent, something like that. That leaves only a minority of accidents caused by mechanical failures."

At least I had an answer for that one. "That's one of the stock misinterpretations of NSC statistics. The same tables that give those breakdowns of accident causes by personal and mechanical failures show the error themselves. True, the great majority of accidents have a personal cause. But you can't subtract the personal from the total and call the small balance all that are chargeable to mechanical failure. The tables show that the majority of accidents have both personal and mechanical causes."

Lars wasn't stopped by that. He went on, "The guy had done some work with accident repeaters. Found that a great majority of them were guys with some special mental and emotional problems. Quoted somebody

named Menninger and somebody named Dunbar to show that psychologists recognize a type who unconsciously want to have accidents, or are so upset and disturbed that they can't protect themselves."

I spun in my chair, scooped Menninger's *Man Against Himself* and Dunbar's *Mind and Body* from my book case. I laid them on the desk alongside the Equipment Issue of the News.

"They're worth reading," I said. "Look 'em over. Neither is very new, but they go pretty deep into the problem—deeper than any recent work I've heard of. They are probably the source of that speaker's dope—or most of it."

Lars said, "So you go along with the psychological reasoning? Then why give so much attention and money to this—?" he flipped open the News at random to a display of machine guards.

I looked up to see that Harry Dexter had dropped his work, had turned to watch me handle the problem—watched with a half-grin, as if he was thinking, "Let's see the boss get off this hook if he can."

But before I could deliver an oration, the phone rang. Harry took it, reached quickly for the pad of preliminary accident report forms, and scribbled on it as he listened. I excused myself from Lars for a second, walked over and looked at the form as Harry completed it. "Location, Assembly A, Aisle 6, injured, maintenance man, probable injury, leg fracture, type, fall from ladder. First aid notified? Yes."

I asked Lars to come with us. Together we checked over the stepladder, spotting the slightly weakened fifth step. Together we visited the plant hospital where the nurse had the man fairly comfortable awaiting the arrival of an ambulance to take him to the hospital for X-rays and setting of the bone. One trouser leg had been cut off to allow splinting, but the other leg showed the frayed cuff that had been dragging under the worn heel of his light oxfords. We listened to the plaintive complaints of the man, "Every blankety-blank thing goes wrong. My kid's sick; my wife's off prowling the bars half the night; I lost three days last week 'cause I was sick, and now this double-blank blasted ladder throws me. What in blazes is the use, anyhow? A guy might as well lie down and die."

We saw him off on the ambulance,

left Harry to work up the report, and went to the cafeteria for coffee. Lars said, "I think I know what you want to say, but explain it, anyway. I'm a dumb Swede. Tie it together."

"All right," I said. "This isn't a report on this accident, because we're talking about accidents in general, so it doesn't matter that I'm adding some details that we don't know for sure yet about this one. But the accident might have happened the way I'll describe it—a lot of them have happened this way. And what I'm going to say doesn't contradict any of the evidence we have about this one."

"First of all, the accident does support the argument of Dunbar and Menninger. This guy came to work in a mood that lowered all his defenses. He was wrapped up in his troubles—real troubles. That made him absent-minded and careless. Maybe he even had, deep down in his subconscious, a desire to harm himself. But it was deep down, not a conscious suicidal impulse on which he was ready to act. If it had been he would have hung himself or jumped in front of a bus.

"Probably he's been depressed sometime. He's let his overalls get ragged, his shoes get round-heeled, greasy on the soles. Very likely he's been slamming at his work—I noticed a badly mushroomed chisel in his pocket—though that didn't have anything to do with this accident. In his banging, he has either damaged his ladder, or perhaps his depression merely kept him from noticing a damaged step or asking that it be repaired.

"Okay, all psychological as the psychologists would say, a dangerously bad mental attitude needing treatment urgently. We have no facilities—or rather very limited ones—for spotting such a state of mind, and less facilities for dealing with it when we've spotted it. I'll hazard a guess that 5 to 10 per cent of the people in the plant are in just as bad mental health.

"So, what do we do? We have to build a safety program around the reality that such attitudes are always present in a minority of our staff. You were looking at machine guards in the magazine advertisement. Now you know and I know that it is perfectly possible to run an unguarded punch press without losing your hands. It is possible, just so long as you are in top

—To page 242

Where Women Work

How to utilize their skills effectively and safely

THE PRESENT civilian women labor force in the U. S. A. today, according to the Bureau of the Census, is estimated at 19,000,000—approximately 30 per cent of all workers.

Two thirds of all employed women are found in domestic and personal services and in the manufacturing and trade groups. But with the exception of a few prohibited occupations they can do practically any work that a man can do, although their employment at some of these occupations is not desirable.

During the war women served as welders, riveters, truck drivers, lathe operators, blast furnace topmen, and in other occupations previously considered unsuitable for women.

Experience in industry has shown that women are exceptionally proficient at the following types of work:

1. Work requiring care, patience, alertness, good eyesight, and use of light instruments.
2. Work requiring manipulative dexterity and speed. They prefer jobs which permit the individual to set her own tempo and to work in a sitting position.
3. Work requiring skill but not too much strength, either in handling parts or setting up machines.

Ten Recommendations

Ten pointers for successful utilization of women workers have been offered by the Women's Bureau of the U. S. Department of Labor:

1. Sell the idea of women workers to present staff, foremen and men workers, if they are not already accustomed to women on the job.
2. Survey jobs to decide which are suitable for women.
3. Make adaptations of jobs to fit smaller frames and lesser physical strength of women. (Generally about 60 per cent the strength of men).
4. Provide service facilities in the plant to accommodate the anticipated number of women.
5. If the number of women employed justifies it, appoint a woman personnel director and head of a woman counselor system.
6. Select women carefully and for specific jobs.
7. Develop a program for induction and training.
8. Maintain good working conditions.
9. Supervise intelligently.
10. Give women equal opportunity with men.

Accident frequency and severity rates are generally lower among women

than among men employees although the difference may be due in part to the fact that jobs on which women are employed are generally less hazardous. Most states have enacted legislation regulating working conditions for women.

These regulations place restrictions on weight lifting, night work, employment in certain occupations, industrial homework, and employment immediately before and after childbirth.

Other provisions found in some state laws cover maximum daily and weekly hours, days of rest, meal periods, rest periods and seating. Recommended standards for maintaining health and efficiency have been published by the U. S. Women's Bureau.

Many women in industry suffer disabling injuries and more women are injured in machinery accidents than in any other way. This may be due in part to the fact that the physical differences in men and women are not always taken into account when operations are set up and guards are adjusted for the latter. Frequent injuries occur in connection with punch presses, power cutting, and sewing and knitting machines.

When women are placed on machine jobs ordinarily done by men, it is important that adjustments be made at all points of operation. Guards should be set close enough that women's smaller hands cannot enter the openings. Height of benches, distances away from piece parts, and foot pedals or hand controls should be reset to conform to the generally shorter stature and reach of women.

Injuries sometimes result because personal protective equipment for women is neglected. Women require the same safety features in protective clothing and equipment as men, but greater attention to appearance is important, as many women will resist the use of garments that are unnecessarily ugly.

Although this may seem merely a feminine foible, thoughtful safety men have capitalized on vanity as a means of promoting the safety program. Suppliers have recognized this fact and are offering safety clothing and equipment that women do not shun.

Work clothing for women should be comfortable and appropriate to the job and, wherever possible, should be attractive—again for psychological reasons. Suitable dresses, uniforms and smocks are available and, where skirts are a hazard, slacks and coveralls are used.

Women's work shoes should conform to standards that apply to men—adequate in weight, comfortable and well-

fitting—and should be equipped with safety toes where hazards so indicate. High heels should be discouraged, since women usually are more susceptible to falls than men.

Two hazards peculiar to women are to be considered where moving machinery is involved—the wearing of jewelry, and loose, flowing hair. These are overcome by prescribing the use of hair nets or caps that enclose every wisp, and by establishing a rule that no jewelry can be worn on the job.

Stature and strength of women must be considered when jobs are assigned and work operations are laid out.

Particular attention should be paid to lifting. Women should be trained in proper lifting methods, just as men workers are, and their limitations must be remembered. The Women's Bureau reports that a gun factory, after thorough tests in an excellent job analysis, set the weight limit at 18 pounds in repeated operations, with a top limit of 35 pounds for occasional lifting.

Many changes in work operations to prevent fatigue for women workers have proved doubly profitable because of increased efficiency. For instance, redesigning job methods to permit sitting in a rubber products plant operation enabled 16 girls to do the work formerly done by 20. An aircraft plant suspended an air-operated wrench, too heavy for a woman to lift, and she found she could then operate two simultaneously, instead of one handled previously by a man.

Sanitary facilities are important to the morale of women workers. Properly equipped rest rooms, toilets and showers are necessary to their comfort and health, and of course, mirrors must not be overlooked. Women workers usually cooperate in keeping such rooms clean and orderly.

Work and Pregnancy

With many married women at work, the effect of work on pregnancy is receiving much consideration. The problem also involves questions of social adjustment. Individual cases may need specific advice and treatment.

In general, it is not considered desirable to employ women in occupations that involve heavy lifting and other strenuous work, or continuous standing or moving about. Occupations involving exposure to toxic materials are also considered extra hazardous during pregnancy. Work with serious injury hazards and jobs that require a good sense of bodily balance should be avoided. Pregnant women should have opportunity for prenatal care and sufficient time off before and after delivery.

Accident Repeaters May Not Be Accident Prone

By H. GENE MILLER

HOW many injuries must a worker have before he is classified as accident prone? This is the general theme of numerous inquiries received recently by the Statistical Division of the Council.

The question cannot be answered categorically, because the number of injuries will vary from one industry to another, from one company to another in the same industry, and even from one department to another in the same company. And because of the effect of chance on the injury pattern, some variations from group averages will be without any significance at all.

Despite these limitations, though, the area of the unknown can be reduced to reasonably meaningful limits through tested and accepted statistical procedures. Stripped of its technical language, the procedure involves merely determining a normal pattern of injury occurrence for a group, and then comparing this with the actual pattern of occurrence.

If a homogeneous group of 1,000 workers has a total of 1,000 injuries (disabling, doctors' cases, first-aid cases) over a period of a year, each worker in the group will not have exactly one injury. Some workers will have no injuries at all, others will have one injury, others two, still others three, etc., with fewer and fewer workers having the larger numbers of injuries—this situation would be normal.

The number of workers having each number of injuries will vary, though, depending on the average for the entire group. For example, if this group of 1,000 workers has a total of only 250 injuries, the normal pattern will show more workers with no injuries and fewer workers with multiple injuries than if the group had 2,000 injuries, in which case there would be fewer workers with no injuries and more workers with multiple injuries.

The expected or normal numbers of workers having different numbers of injuries can be calculated for any group of workers by the following simple procedure:

First, find the average number of injuries per worker by dividing the total number of workers into the total number of injuries. Thus if 1,000 workers had 1,500 injuries, the group average would be 1.5 injuries per worker.

The next step is the only difficult one in the whole procedure because it requires the use of logarithms. It is done as follows:

Set down the logarithm of the number of workers.....
.....(Logarithm of 1,000 is 3.0000)
Multiply the average number of injuries by 0.4343—a constant used in all problems of this kind.....
.....($1.5 \times 0.4343 = 0.6515$)
Subtract(2.3485)

Look up the antilog of the remainder (antilog of 2.3485 is 223). This is the number of workers out of the 1,000 workers who would be expected to have no injuries at all, if the experience of the group were normal.

Next, multiplying the 223 by the group average 1.5 equals 335. This is the number of workers who would be expected to have 1 injury.

Now to get the number of workers expected to have 2 injuries, 3 injuries, 4 injuries, etc., multiply each successive product by 1.5 and divide by the number of injuries (2, 3, 4, etc.). For example, to get the number of workers expected to have 2 injuries, multiply 335 by 1.5 and divide by 2. This equals 251. Then multiply 251 by 1.5 and divide by 3. This equals 125, etc.

Extending the above calculations produces the following totals for our group of 1,000 workers having an average of 1.5 injuries per worker:

Normal Distribution of 1,500 Injuries Among 1,000 Workers		
No. Workers	Injuries per Worker	Total Injuries
223	0	0
335	1	335
251	2	502
125	3	375
47	4	188
14	5	70
4	6	24
1	7	7
1,000		1,500

The above pattern is normal for the group in question and can be used to test or evaluate the actual experience of the group.

In using this technique, the time interval covered should be a year or less, and the injuries should include those of all degrees of seriousness occurring during this time. If only disabling injuries were used, and the time interval were extended to 5 or 10 years in order to accumulate a sufficient vol-

ume of cases, employee behavior patterns could change and the results would be less meaningful.

Interpretation

One use of this procedure is to point out that variations from the average of 1.5 injuries per worker is normal. Thus a safety man may avoid the time consuming task of searching for accident prone causes which may not exist.

For example, the above table indicates that in the situation presented, it would be normal for one worker to have as many as seven injuries during a year without necessarily being accident prone. If a worker should have these many injuries, though, it does not mean that his experience should be ignored. On the contrary, good safety practice would dictate that this worker's experience should be studied carefully. But, fortified with the knowledge that this man may not be accident prone, the safety man will spend only a minimum amount of time examining the experience, and will not continue to search for an accident prone behavior pattern which possibly doesn't exist.

If a half dozen workers in this group had seven or more injuries, though, indications would be that at least some of them are accident prone. It is possible that one or two of the group are not accident prone, but the procedure would be to examine the experience of all of these workers.

Another use of this procedure is to identify accident prone plants. In the example situation, if instead of the normal pattern shown in the table, there were many more one-injury and two-injury workers, with relatively few zero-injury and three-or-more-injury workers, this more even distribution of injuries among all workers would indicate—even apart from the plant's injury rates—that the plant itself was accident prone.

Minor variations from the pattern shown will not prove that accident repeaters are accident prone, but sharp variations probably will be meaningful. While the method does not produce precise answers, it can make a contribution to the safety man's activities by narrowing the limits of the unknown.

Variations of actual experience from normal experience may be tested more exactly by statistical methods, but for practical purposes, examination of differences as suggested above should prove satisfactory.

H. GENE MILLER is Director, Statistics Division, National Safety Council.

THE SAFETY WARDROBE



**HATS, CAPS
HELMETS**

Sparks
Hot Molten
Metals
Acids & Alkalis
Sulphur
Flaming Objects
Flying Particles
Cuts & Abrasions
Blasts
Explosives
Mechanism

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X		X	X	X					X		X		
X								X	X	X	X		

Asbestos
Plastic-Rubber
Sertex-Wool
Metal
Fiberglass

**COATS, APRONS
WAIST PROTECTION**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X					X		X			
			X	X	X			X		X	X	X	
			X	X	X			X		X	X	X	
					X								
			X										

Asbestos
Chrome Leather
Plastic
Rubber
Kevlar-Fiber
Chemical Resistant
Reflective Fabric

**SLEEVES
WRISTLETS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X					X		X			
X	X	X						X				X	
			X	X	X						X		
			X	X	X			X		X			
					X								
			X										

Asbestos
Chrome Leather
Flameproofed Duck
Fiberglass
Rubber
Chemical Resistant
Reflective Fabric

**GLOVES, MITTENS
HAND PADS
FINGER GUARDS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X					X		X			
			X	X	X			X		X			
			X	X	X					X			
											X		
										X			

Asbestos
Chrome Leather
Rubber
Plastic-Rubber Coated Fabric
Metal Mesh
Cotton-Gloves

**PANTS, KNEE PADS
LEGGINGS**

1	2	3	4	5	6	7	8	9	10	11	12	13	14
X	X	X											
X	X		X					X		X			
X	X	X						X				X	
X						X	X		X		X		
			X	X	X					X			
			X	X	X			X		X			
					X								
			X										

Asbestos
Chrome Leather
Flameproofed Duck
Fiberglass
Plastic
Rubber
Chemical Resistant
Reflective Fabric

SHOES, BOOTS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
							X		X			X	
			X	X	X	X				X			
X	X	X	X										
			X	X	X				X	X			
												X	

Steel Toe Caps
Steel-Shod Shoes
Wooden Soles
Chrome Leather
Rubber
Conductive Rubber

Courtesy "Better Living,"
E. I. du Pont de Nemours & Co.

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Sixteenth Annual Safety Equipment Issue

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Plant Design and Layout

LOCATION, design and layout are factors which affect safety and efficiency in industrial operations. Attention to these details in the preplanning will avoid building into the plant many hazards that may cause accidents, occupational diseases and fires.

Plans, specifications and layouts should be checked and approved by fire, health and safety authorities, who can advise company officials about municipal and state regulations as well as many other important factors not covered by regulations. Meeting legal requirements may save costly changes after construction.

Voluntary safety codes developed by various organizations have established standards for certain structures and equipment.

Remodeling an existing plant also offers many opportunities for improving conditions from the standpoint of safety and health. It has been estimated that more than 75 per cent of the industrial buildings in the United States are more than 25 years old. This period has seen some remarkable developments in industrial design and many of them can be incorporated in older structures.

The following important features should be checked when plans are being made:

1. Site
2. Transportation facilities
 - Docks and wharves
 - Railroad
 - Roadways
3. Exits and other wall openings
4. Floors, walkways, stairs, ramps, platforms
5. Storage facilities:
 - Flammable and explosive materials
 - Harmful substances
 - Raw materials
 - Finished products
 - Yard storage
6. Electric wiring and installation
7. Illumination
8. Mechanical handling equipment:
 - Cranes
 - Conveyors
 - Industrial trucks

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9. Elevators
10. Boilers and pressure equipment
11. Ventilation
12. Fire Control
13. Health and Safety
 - Water
 - Waste disposal
 - Medical and first aid service
 - Personal protective equipment distribution and repair facilities
14. Personal service facilities:
 - Parking
 - Food service
 - Rest rooms
 - Employment
 - Training

Visualizing the finished plant. In planning the layout, each operation can be visualized and provided for. The simplest method is by maps and drawings. More effective are block templates and 2-dimensional templates.

Scale models, $\frac{1}{4}$ " to the foot, provide a realistic 3-dimensional picture of the plant. Various arrangements can be made and it is possible to study a manufacturing process quickly and easily. Operations may be combined or simplified and the sequence changed.

Standards for templates and models

are being developed by a committee of the American Society of Mechanical Engineers.

"Controlled Conditions." The windowless plant, independent of the outdoors for light and ventilation, and the conventional type of building both offer certain advantages. From the standpoint of safety and employee health, satisfactory conditions are possible with either type.

General Factors

Type of industry is the major factor in planning plant requirements. Even plants in the same industry may have individual problems that involve special planning. Fire and explosion hazards, use of toxic materials, unusual problems of materials handling and storage are among these factors.

The site. The working day really begins when the employee leaves home in the morning and ends when he is back home. Tardiness and absenteeism increase when getting to and from work is difficult. Management is also concerned about traffic accidents involving employees.

Space for future requirements is a major consideration in selecting a site.

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New plant of Link-Belt Co. at Colmar, Pa. Plant is of modern design with large uncrowded work areas. Combines straight-line production with extreme flexibility. Receiving and shipping areas are designed for efficient movement of truck and rail shipments. Railway spur runs into plant at each end. Concrete roadways extend into plant. Project includes a complete sewage treatment plant. (The Austin Co.)

Lighting the Workplace

PRODUCTION, safety and personal comfort require good lighting. The effect on the individual's morale and his attitude toward his job are scarcely less important.

Industrial processes have been growing more complex, throwing increasing burdens on the eyes. Labor costs have increased and the investment per worker is greater. These demands have stimulated lighting research with a goal of better working conditions and greater efficiency.

To enable the human eye to function effectively, the lighting system must:

1. Illuminate the work surface to a point of brightness which enables the worker to see easily and accurately and to work at an efficient speed without eyestrain and unnecessary fatigue.
2. Illuminate the room generally so that all sections are free from excessive contrasts, harsh glare and disturbing shadows, and contribute a pleasant atmosphere.
3. Supply light of right color and quality to permit quick and accurate judging of appearance details.

Illumination Levels

Recommended levels of light for a wide variety of operations will be found in many reference works. One of the most comprehensive works on lighting is the *IES Lighting Handbook*. Much useful information is also contained in manuals published by manufacturers of lamps and fixtures.

Existing levels are determined from readings with a light meter at the spot where light is needed. This device gives a direct reading of the number of footcandles.

There are two seeing zones in which brightness should be controlled. The first is the "task zone," which includes the job and its immediate surroundings. Here the work should be illuminated

adequately, shadows eliminated or diffused, reflections from surfaces avoided. The immediate surroundings of the task should not be much brighter than the work.

The other and larger zone is the rest of the room. When a worker looks up from his work, he should not encounter glare from lighting fixtures or from a bright wall or ceiling. Trying to adapt the eyes from light to darkness several hundred times each day results in much wasted energy.

Visual conditions are reasonably good if the surrounding area has a brightness at least one-third that of the task. It should not be brighter than the task itself.

Higher illumination levels throughout the work area and surfaces finished in colors with high light reflectance reduce the glare hazard by reducing the contrast between adjacent surfaces. Light colors on ceilings, walls, floors and machines, kept bright by regular cleaning and repainting, reflect a high percentage of light.

Some directional and shadow effects are desirable in general lighting to accentuate the depth and form of solid objects, but harsh contrasts should be avoided. Clearly defined shadows, not too deep, are helpful in some operations, as in textile inspection.

General lighting. The minimum amount of light required for an area is termed general lighting. This has been defined as a uniform distribution of the light to produce approximately equivalent seeing conditions throughout an interior.

Localized general lighting sources are usually arranged 10 feet or more above the work. Their primary purposes are to prevent too great a contrast in

brightness between the more highly lighted work area and the adjacent areas, to provide sufficient light for general safety and protection, and to provide light for ordinary visual needs.

For general overhead lighting, levels range from 5 footcandles for inactive storage and passageways to 100 footcandles for high-speed production and highly skilled work.

To insure adequate levels, even where conditions are favorable, the system should be designed to give initially at least 25 per cent more light than the recommended minimum.

Where dirt collects rapidly and systematic maintenance is not provided, the initial value should be 50 per cent above the minimum.

Supplementary lighting. Some difficult seeing tasks require more light than can be obtained economically by overhead general lighting. For such work supplementary fixtures are used.

Two types of equipment meet most needs. One uses small concentrating projectors to increase the light on the work and provide directional quality.

Another type is the large area, low brightness area, such as fluorescent desk or bench lamp. It can provide either general lighting for a small area or extra light for critical work, such as inspection.

Supplementary lamps should be shielded, louvered or mounted to prevent glare.

Artificial Light Sources

Three common sources are: (1) Filament lamps; (2) Fluorescent lamps; (3) Mercury vapor lamps.

Filament (incandescent) lamps are available up to 1500 watts for general and special service. There is a type for almost every industrial, public and domestic need. For many purposes its lower cost and greater convenience may offset the higher efficiency of other light sources. No auxiliary equipment is needed; merely a standard socket and available current.

The quality of light is pleasing and most colors look well under it.

Fluorescent lamps have found wide acceptance in industrial lighting. They are two to three times as efficient as filament lamps and have a relatively low heat output—about one-fourth that radiated from filament lamps. This is a

—To page 12



Final assembly operation on fountain pens in new plant of W. A. Sheaffer Co. General illumination is supplemented by individual fluorescent bench lights. Fine particles in the finished grinding operations are trapped and removed by network of ducts which lead into single exhaust system. Entire factory is air conditioned. (The Austin Co.)

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Light and Color

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Industrial Floors

FLOORS must be strong enough structurally to support both static and moving loads. They must also withstand the impact and abrasion of foot and wheel traffic and the blows of heavy objects dropped accidentally.

The floor surface should suit the occupancy and traffic. It must offer good traction and resistance to slipping under normal use.

For most requirements there is a fairly wide variety of satisfactory flooring materials. Sometimes a compromise between the best material and the installation cost may be necessary.

General requirements. Various operations make special demands on the floor but the following specifications, or a reasonable compromise, are desirable:

1. **Strength**—Sufficient to carry four times the expected static load or six times the moving load.
2. **Resistance to slipping**—Material should not be slippery nor likely to become slippery through wear or contact with other materials.
3. **Durability**—It must stand up under normal traffic and wear evenly without developing holes and splinters.
4. **Maintenance**—It should be easy to keep sanitary and in repair.
5. **Fire resistance**—Important in most industrial property.
6. **Comfort**—Resilience and low heat conductivity reduce fatigue.
7. **Quietness**—Another aid to reducing fatigue.
8. **Initial cost**—Often the deciding factor.

Flooring Materials

Each flooring material has its limitations. Some with a high rating for durability and resistance to slipping may be too expensive for general use. These are often usable for limited special areas where a sure footing or resistance to chemical or abrasive action is unusually important.

The accompanying table will serve as a guide in selecting flooring for various areas. It does not include all types of flooring or all problems concerning their use. Manufacturers have devoted much research to these problems and have considerable data available.

Smooth, hard surfaces, like concrete, are particularly susceptible to chipping and abrasion. Trucks with steel wheels and heavy falling objects are destructive to the surface. Rubber tires are easier on all floors as well as on the ears.

Concrete is suitable for a wide variety of industrial uses, interior and exterior. It is one of the best materials for damp locations, but does not withstand acids. The floor should be graded to avoid spots where liquids can collect.

Drains with strainers are desirable where the surface is cleaned by flushing or where there is danger of flooding.

A durable roughened surface, resistant to cracking and dusting, can be obtained by a wood float finish to a

mixture of pea gravel, sand and cement. Too smooth a surface is slippery when wet and is actually more tiring to the feet than a rougher one.

Concrete may be considered too hard and too cold in some locations. Resilient mats of low heat conductivity are used where workers must stand in one position for long periods.

Hardening compounds or sealers can be applied to prevent dusting.

Concrete floors can be made conductive and non-sparking with surfacing compounds containing nonferrous metallic aggregate. This treatment also makes the floor more wear resistant.

For repairing holes and cracks some compounds are superior to concrete. Patching with concrete, even when well done, may crack out under heavy loads.

For painting, a general purpose floor enamel may be used but finishes prepared especially for concrete are more durable. New concrete should be treated with zinc sulphate solution to neutralize alkalinity.

Concrete provides a rigid and substantial base for resilient types of flooring.

Asphalt (hot mastic) is non-dusting, elastic, odorless, and easily repaired. Problems of application restrict its use indoors.

Asphalt is resistant to weather and moisture but is affected by oils, solvents, acids and alkalis. It stands up well under traffic but ordinary grades soften at temperatures above 95 degrees F.

Harder grades of asphalt remain firm up to 158 degrees F. There are also acid-resisting grades.

Asphalt emulsion, sold under various trade names, is made into a mortar with sand and cement and laid cold about one-half inch thick. It is used extensively for patching. On a substantial wood base it will carry moderate traffic; with a concrete base it will stand heavy trucking. The surface is somewhat harder than the hot mastic type. It is also affected by oils and solvents.

Mastic flooring materials of other types usually have a resin binder. They are generally resistant to oils, solvents and alkalis, but the manufacturer should be consulted about the exposure. These materials are relatively high in price and are used principally for patching and for resurfacing limited areas.

Ceramic tile is frequently used where oils, acids or alkalis are present and in food product plants where floors must be washed frequently.

Asphalt tile is a resilient material suitable for offices, stores and light manufacturing areas. It is available in several grades—industrial, standard, greaseproof, conductive, and greaseproof-conductive. It is moisture resistant but susceptible to indentation. It is lower in price than most types of flooring. It is non-slippery in its normal state and can be kept in good condition with non-slip floor finishes.

Linoleum is quiet and comfortable underfoot. It is used in office, laboratories and workrooms, where cleanliness is important. Heavy gauge linoleum will withstand loads up to 75 pounds per square inch without permanent marking. Since highly polished linoleum is extremely slippery, the choice of a finish is important.

—To page 54

COMMON FLOORING MATERIALS FOR INDUSTRIAL USES

AREA	Concrete	Asphalt hot mastic	Asphalt emulsion	Wood block	Wood plank	Asphalt tile*	Greaseproof asphalt tile	Resin binder mastic	Linoleum*	Terrazzo	Rubber tile	Ceramic tile*	Metal plates	Grating
Floors on grade.....	X		X	X	X	X								
Floors below grade.....	X					X	X							
Suspended floors.....			X		X	X	X	X	X	X	X	X		X
Driveways.....	X	X	X											
Ramps and loading docks.....	X		X	X	X									
Manufacturing areas.....	X		X	X				X						
Warehouses.....	X		X	X										
Stair treads.....	X					X			X	X			X	X
Offices.....						X			X		X			
Laboratories.....						X	X		X	X	X			
Cafeterias.....							X		X					
Washrooms.....	X					X				X	X	X		
Food processing.....	X						X					X		
Corridors.....	X								X	X				
Platforms, catwalks.....					X								X	X

* Also available in conductive grades for explosion-hazardous areas

Light

—From page 10

decided advantage in air-conditioned interiors.

Fluorescent tubes are best suited for large areas and they should not be mounted too low.

Low surface brightness is one of the important qualities of fluorescent tubes but bare tubes are too bright for eye comfort. Reflectors with louvered bottoms or translucent panels improve diffusion and reduce glare.

Mercury-vapor discharge lamps have high light output per watt, long life, and low operating and maintenance cost.

These lamps require auxiliary equipment which makes the initial cost higher. Restarting time is relatively long. Color of light is less pleasing than that from most other sources.

For high bay mounting where work areas are large and maintenance difficult, mercury vapor lamps are frequently used.

For rough work, as in steel mills and foundries, they may be used alone. Where color discrimination is important, alternate fixtures of mercury and incandescent lamps are used.

Several types of mercury vapor lamps are available. The pressure at which the lamp operates accounts in large measure for the color of the light produced.

Reflectors. Lamps used without re-

flectors waste light and may cause uncomfortable or dangerous glare. Many types adapted to the light source and location are available. Factors to be considered in choosing the type of unit are:

1. Distribution of light and suitability for the interior.
2. Efficiency of light output.
3. Sturdiness of construction.
4. Adaptability if more light is desired.
5. Economy of cleaning and replacement.

Lamps with reflectors built into the bulb are advantageous where dust, fumes and other conditions make maintenance difficult or costly. The internal reflecting surface is not subject to depreciation and light is diffused through the bottom of the bulb. These lamps are available in both filament and mercury vapor lamps.

Natural Light

Whether to design a plant to make fullest use of natural light or to depend largely or wholly on artificial light, is primarily an economic problem. Light of satisfactory quality and quantity can be obtained from either source.

Side windows alone are inadequate for lighting extensive areas, even in bright daylight. Sawtooth, monitor or skylight windows take full advantage of natural light but add to the cost of construction and maintenance.

Glare may be subdued by glazing windows with refracting or diffusing

glass which will alter the direction of light and improve its distribution, particularly to distant parts of the room.

Translucent coatings for windows on the sunny sides of buildings are also helpful in reducing glare.

Reflection of daylight from sources outside a building can often be utilized. Light colors for faces of structures, walls of courts, and sawtooth roofs are helpful. These surfaces should be kept clean and free from sources of glare.

Sudden transition from bright to dim areas in a plant is hazardous. While the pupil of the eye is adjusting itself to the dimmer light there is a period of semi-blindness. Gradations of light at the approaches to areas of different intensity will avoid this trouble.

Special Lamps and Fixtures

Where lighting equipment is required for special uses or subjected to abnormal conditions, many types of lamps and fixtures are available.

Glow lamps are used as signal, pilot and night lights. They are not practical for general illumination.

Vibration-resisting lamps give greater service where ordinary lamps would have a short life because of excessive vibration.

Weather-resistant lamps are used for outdoor lighting in industrial plants, docks, athletic arenas, etc. They stand exposure to rain, sleet and snow without cracking.

—To page 14

"BIGGEST NEWS OF '53" . . . Automatic Emergency Lights to Comply With Civilian Defense and Other Regulations in *YOUR* City and State



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FLOODLIGHTS • SAFETY SWITCHES • EXPLOSION PROOF LIGHTING FIXTURES AND CONDUIT FITTINGS

Light

—From page 12

Explosion-resistant fixtures are used where dusts, gases, fumes and vapors may create a hazardous atmosphere.

Infrared lamps, available in types and sizes up to 1000 watts, are used for baking, drying and heating processes, as well as for therapeutic use.

Maintenance

Efficient lighting requires a systematic maintenance program. Equipment may meet all requirements when installed but dust and grime immediately start reducing light output.

The first step in a maintenance schedule is to check illumination periodically with a light meter. When light has decreased to 75 per cent of its original value, the lamps and reflectors should be washed with warm water and a detergent containing no free alkali.

Group replacement of lamps, both filament and fluorescent, is often practicable and desirable. The saving in cost of replacing a large number of lamps at one time is greater than the value of the remaining light output of the lamps. Point of replacement is usually 60 to 80 per cent of the rated lamp life.

Disconnecting hangers permit lowering fixtures to the ground or floor for cleaning, relamping and repairs. Much climbing is eliminated.

Emergency Lighting

Where failure of the power system might endanger life, an emergency lighting system is desirable. In some states it is required under certain conditions.

Searchlights, stationary or portable, which can be concentrated on critical areas, are often desirable for outdoor use.

Portable systems, mounted on trucks, can be moved to the scene of a fire or accident to aid fire-fighting and rescue work.

Protective Lighting

Outdoor lighting for safer night work or to detect trespassers is required by most industrial plants. Where work is done outdoors after dark, levels must necessarily be higher than those needed chiefly for plant guards to spot intruders and detect unusual activities and conditions.

Light sources should be shielded and aimed so that the guards can see clearly at all times. Light can be directed to form a "glare barrage" in the direction from which intruders might approach the plant.

Multi-Tenant Buildings

WHEN an industrial concern shares a building with other tenants it is subject to restrictions which do not confront companies having sole occupancy. Fellow tenants and the building management, as well as the company's own personnel must be considered.

Tenants of these buildings are usually engaged in mercantile and light manufacturing operations. The buildings are often located in built-up sections where zoning regulations may restrict some type of operation. Traffic and parking problems may also cause difficulties.

Zoning ordinances and their effect on the type of industry must be considered by prospective tenants. Approval of buildings and facilities by local and state authorities should also be secured. There should also be a definite understanding with the building management about mutual responsibilities for maintenance and services.

The following factors should also be considered:

1. Floor load capacity.
2. Plant protection
 - Type of building construction
 - Exits
 - Fire alarms and fire-fighting apparatus
 - Emergency lighting equipment
 - Watchman service
 - Proximity to hazardous operations
3. Electric wiring—Is it adequate and safe for light and power requirements?
4. Ventilation and exhaust—To protect health of employees and avoid creating a public nuisance.
5. Elevators—Location and provision for operation and maintenance.
6. Personal service facilities
 - Wash and rest rooms
 - Neighboring restaurants and possibilities for in-plant feeding.
7. Public transportation and parking.
8. Possibilities for expansion.

EVERY STEP A SAFE STEP

WITH

BLAW-KNOX GRATING

Everyone walks safely, confidently on Blaw-Knox Electroforged Steel Grating... the one-piece panels stay rigid and strong—without shimmy or shake—because there are no parts to work loose. Twisted cross bars provide sure footing under the most adverse conditions. For complete information, write for Bulletin 2365.

BLAW-KNOX GRATING

Industry's first choice for

- SAFETY • STRENGTH • LONG LIFE
- LOW UPKEEP • SELF-CLEANING

Grating Department
Blaw-Knox Equip. Division
BLAW-KNOX CO.
2078 Farmers Bank Bldg.
Pittsburgh 22, Pa.



BLAW-KNOX ELECTROFORGED STEEL GRATING

Stairs and Ramps

STAIRS AND RAMPS are important arteries of traffic in plants where operations are conducted on more than one level. Three types of permanent passageway between different levels are: (1) Stairs (2) Ramps or inclines (3) Fixed ladders.

The following general limitations apply:

Stairs are used where the grade is between 20 and 50 degrees from the horizontal. Preferred angle is 30 to 35 degrees.

Ramps and inclines should slope as little as possible; 15 degrees is the recommended maximum.

Fixed ladders are for grades over 50 degrees where stairways are not practicable. Use of ladders as a substitute for stairways is prohibited in some states.

Stairs

Long stair flights are to be avoided wherever possible. Landings every tenth or twelfth tread are recommended.

For grades between 7 and 20 degrees, a combination of stairs and level landings may be used.

Treads and risers. Ratio between depth of stair treads and height of risers determines the angle or pitch of the stairs, which should be between 30 and 38 degrees from the horizontal. Tread depth and riser height must be constant for each flight.

Winders should be avoided. Wedge-shape treads make it more difficult to ascend or descend safely.

Treads must be deep enough that, in descending the stairs, the ball of the foot does not project beyond the nosing and the heel does not strike against the riser above.

The Building Exits Code, A9.1, specifies that treads of new stairs shall not be less than 9½ inches, exclusive of nosing. The Code also states that no stairs with a tread of less than 6 inches, exclusive of nosing, shall be permitted.

Stairs subjected to severe use, as in public buildings, should have treads with a durable non-slip surface. Materials used for original installation or repairs include abrasive metal, steel with extruded patterns, grating, plastic compounds, rubber and fabric with abrasive surface.

Risers should not be more than 8 inches nor less than 5 inches in height. Greater or less height will cause one to take an unnatural stride which may result in a serious fall.

Railings and handrails. The ASA Code on Floor and Wall Openings, Railings and Toe Boards, A-12, requires that every flight of stairs having four or more risers shall be equipped with standard stair railings or standard handrails as specified.

—To page 16



... THEN WE INSTALLED ALGRIP And Ended Slipping Accidents And High Insurance Costs!



It happened at a large industrial plant, where oil and grease on a loading platform created a constant hazard. A lift truck skidded on the slippery surface, toppled from the platform's edge, and crushed the operator to death.

ELIMINATED:
Accidents like this
—which cost a
man his life,
SAVED:
\$20,000 in Additional
Compensation
Premiums.

Then A.W. ALGRIP Abrasive Rolled Steel Floor Plate was installed on the platform—and slipping accidents ended at once. For ALGRIP is truly non-slip—even on steep inclines! Hundreds of tiny abrasive particles in each square foot of ALGRIP converted the slippery, dangerous platform into a hard gripping, anti-skid surface—safe for men and vehicles alike.

IMMEDIATE SAVINGS were obtained in three ways: (1) No more costly, morale shattering accidents. (2) Faster handling of loads. (3) Workmen's compensation insurance premiums were substantially reduced by more than enough to pay for the ALGRIP installation.

END SLIPPING ACCIDENTS THAT STEAL PRODUCTION AND KITE INSURANCE RATES

A.W. ALGRIP—only abrasive rolled steel floor plate in the world—pays for itself in savings from safety. Tough abrasive particles (same kind used in grinding wheels) put hundreds of tiny safety-brakes in every footstep—make it virtually impossible to slip even on steep inclines. ALGRIP doesn't wear smooth either—wear only exposes new particles. And tough rolled steel makes this floor plate stronger than other abrasive floorings. For safety at a saving, get the full ALGRIP story today. Write for our new Booklet AL-14—without obligation.

Over 125 Years of Iron and Steel Making Experience.

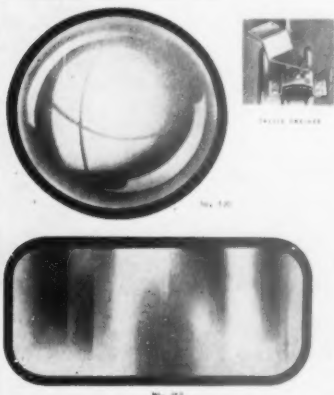
ALGRIP Abrasive Rolled Steel Floor Plate
ALAN WOOD STEEL COMPANY

CONSHOHOCKEN, PA.

Other Products: A. W. SUPER-DIAMOND Floor Plate • Plates • Sheet • Strip
(Alloy and Special Grades)



KLEAR-VU SAFETY MIRRORS for INDUSTRIAL USE



Klear-Vu Safety Mirrors are designed for use in factories and large institutions, where blind corners, cross aisle intersections, entrances and exits present a safety problem because of traffic accidents. Mounted at a height of 8 to 10 feet, Klear-Vu Safety Mirrors clearly reflect the movement of oncoming floor traffic from opposite directions—thereby removing principal cause for collisions. Mirrors are easily installed and adjustable to any desired angle. They are also adaptable for use on various types of machinery.

Style	No.	Dimensions
Circular Convex Glass	120	12" Dia.
Circular Convex Glass	180	18" Dia.
Flat Glass Rectangular	918	9"x18"
Flat Glass Rectangular	240	16"x24"

Why risk a traffic accident—because of obstructed vision at your corner locations . . . ?

Install Klear-Vu Safety Mirrors . . . then you can see what's around the corner.

Write for bulletin

Lester L. Brossard Co.

540 N. MICHIGAN AVE.
CHICAGO 11, ILL.

Ramps and Runways

Ramps and runways are preferable to stairways when it is practicable to use them. They should be built to the least slope possible. Maximum recommended slope is 15 degrees. A rise of more than 1 foot in 10 is prohibited in industrial plants in some states.

For wood ramps materials used in construction should meet the requirements for scaffolds. Width should be adequate for traffic and open sides should be protected with standard railings 42 inches high.

Toeboards should be installed where the ramp extends over a work place or passageway. Cleats 16 inches apart are needed on steep inclines.

Planks should not overlap. The length of the plank should run the long way of the ramp. Ramps used for wheelbarrows should have an odd number of planks with no cleats on the center plank. The width should be not less than 3 feet.

Ramps made of concrete are preferable for heavy traffic. Anti-slip surface can be obtained by rough floating or by incorporating abrasive in the finish coat. Hardeners and troweling should not be permitted.

When the surface of a concrete ramp has been worn smooth, it can be roughened by scrubbing with dilute nitric acid. The surface is then hosed to remove all traces of acid.

Ramps used for heavy vehicular traffic, such as power trucks and heavy duty hand trucks, should have solid curbs in addition to the handrails.

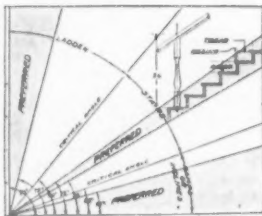
Ramps included as parts of aisles and traffic routes should be as wide as the aisle to avoid bottlenecks.

Splinters, nails, irregularities, breaks and cracks in the surface are dangerous and should be repaired immediately.

Outdoor ramps should be kept clear of snow and ice. When necessary, cinders should be applied to give traction. Radiant heating on outdoor ramps and platforms is often a good investment.

STAIRWAYS, RAMPS AND FIXED LADDERS

WHEN and when not to construct ladders, stairways or ramps for a particular situation is sometimes a puzzling problem. The angles at which to build them is likewise a problem. Since many accidents occur on them when proper forethought has not been used in time of construction both of these problems have an important bearing on safety. The accompanying diagram shows the best practice.



Courtesy: Workmen's Compensation, Bureau



SAFETY INSTRUCTION CARD No. 37

For Greater Safety at No Extra Cost!

A.O. Smith Grating Gives

**NON-SLIP PROTECTION
IN EVERY DIRECTION!**



100% SERRATED A.O. Smith SAFETY GRATING COSTS NO MORE

than ordinary
grating



A.O. Smith CORPORATION

Grating Division, Dept. NS-353

Milwaukee 1, Wisconsin
Chicago 4 • Houston 2 • Los Angeles 22 • New York 17
International Division: P.O. Box 2023, Milwaukee 1



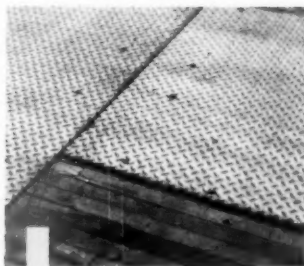
SAFETY PAYS OFF

- ▶ Save Man Hours
- ▶ Pay Lower Insurance Rates
- ▶ Enjoy Better Fire Protection
- ▶ Have Happier Employees

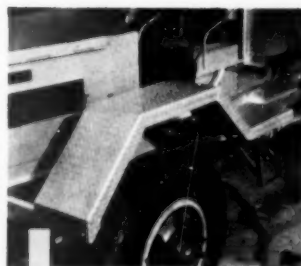
with Industries' first choice of safety flooring-



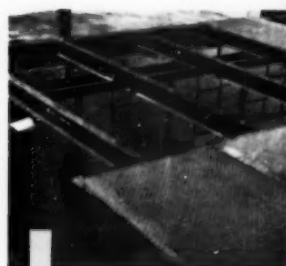
[®]
4-WAY safety plate



**for
replacement**



**on new
equipment**

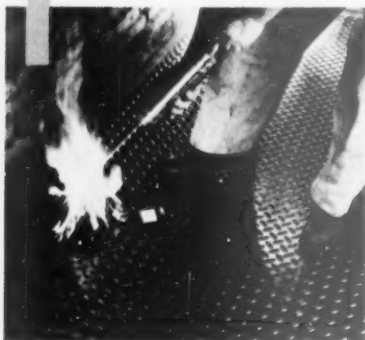


**in
construction**

4-WAY[®] safety plate

firesafe

4-WAY is popular as a safety flooring in plants and for product use where fire hazards are a problem. Resists intense heat and shock with ease. Eliminates fire risk, reduces insurance costs.



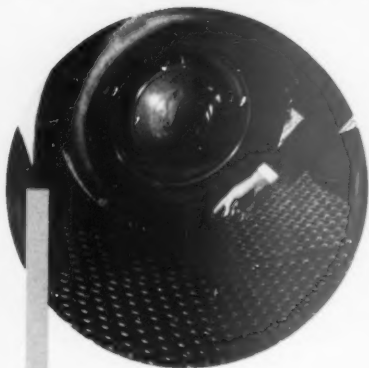
attractive

Popular demand for 4-WAY also results from its attractive appearance, eye-pleasing design. Pattern is uniform in all directions, pieces are easily matched. Looks good even after years of service.



economical

You'll be floored by 4-WAY's low cost! Initial cost is competitive with other flooring materials, installation cost may be less. Repair cost is practically eliminated. Maintenance is trouble-free.



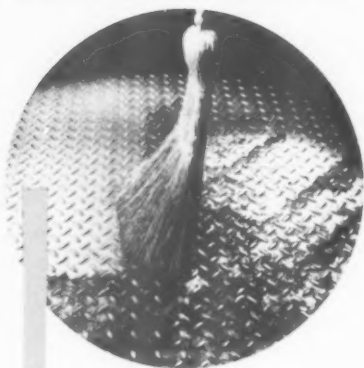
safe

Specially designed raise-lug pattern provides dependable all-weather traction for men and vehicles. Stops and starts are made quickly, safely—before accidents get a foothold.



strong

Rough abuse and heavy loads are taken in stride by this tough, tried and proved steel plate. Made of finest rolled open hearth steel. Withstands great stresses.



cleans easily

Where cleanliness and sanitation are prime factors of importance, 4-WAY provides sanitary flooring with no dirt-catchers. Liquids drain away freely, are not absorbed. (Chemical resistant.) Won't splinter, chip or crack.

there's a **4**[®]-WAY safety plate size and pattern

Can be . . . Flame Cut • Sheared •
Sawed • Drilled and Punched •
Welded • Formed • Spot Welded

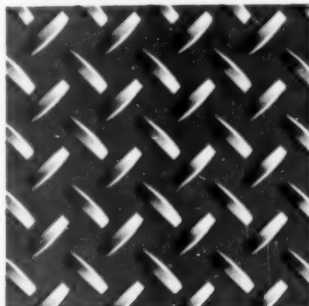
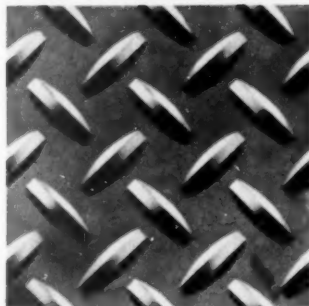
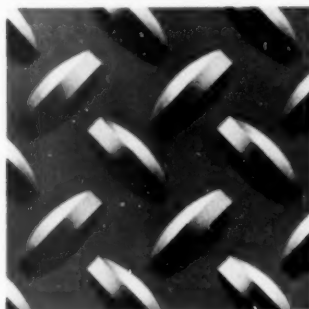
Goes down fast and flat, fits snug
with a minimum of preparation. You
have a safe floor surface ready for
instant use.

Easy to fabricate and maintain—
with the strength found only in steel.
These and other advantages make
4-WAY the outstanding choice of
industry. See how safety pays off
when you use Inland 4-WAY safety
plate.



easy to fabricate

4-WAY can be fabricated by any of
the conventional processes used on
carbon steel plates. On-the-spot
cutting, drilling or burning is read-
ily accomplished with standard
equipment.



(One-half actual size)

TO FIT YOUR NEEDS

**LARGE
PATTERN**
recommended for floors
that must withstand
tough abuse and
heavy loads

**MEDIUM
PATTERN**
the most popular and most
versatile pattern for use
in your plant or on
your product

**SMALL
PATTERN**
for applications requiring
weight reduction or
severe forming

**MAIL for more
information**

**CLIP THIS
COUPON**

INLAND STEEL COMPANY

38 South Dearborn Street
Chicago 3, Illinois

Gentlemen:

Please furnish me with the following information
on 4-WAY safety plate:

☐ Catalog ☐ Availability and ordering information

Name _____ Title _____

Firm _____

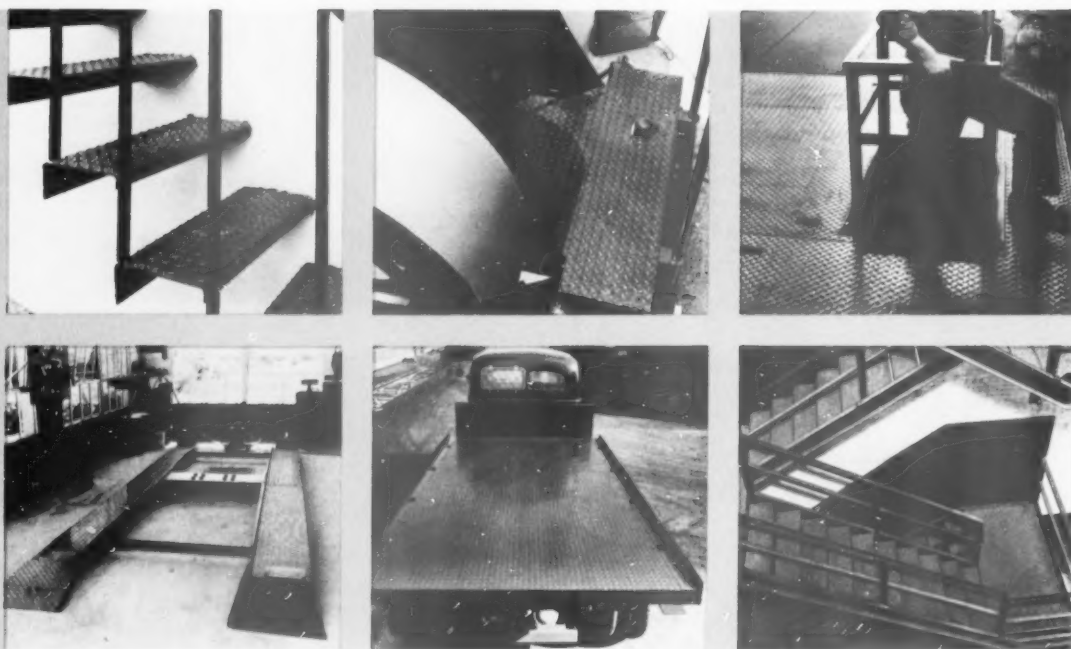
Address _____

City _____ Zone _____ State _____

A B C D E F G H I J K L M N O P Q

Inland 4-WAY[®] safety plate

PROVED
IN USE



Actual use under the most trying conditions has proved Inland 4-WAY the versatile answer to flooring problems. Rugged, long lasting, it combines safety, strength, fire resistance and ease of maintenance all rolled into one. See for yourself how 4-WAY can safeguard you best and save you more. Send for the catalog that tells the complete 4-WAY story.

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SECTION 2

HOUSEKEEPING AND MAINTENANCE

Plant Housekeeping

HOUSEKEEPING is involved in every phase of plant operation. Attention to its numerous details brings conspicuous benefits in productive efficiency, sanitation, health, control of accident and fire hazards, and employee morale, as well as in improved appearance.

The housekeeping program includes the entire premises, indoors and out.

Maintaining order and cleanliness is the combined responsibility of management, supervision and employees. The best program cannot succeed without the support of everybody, and this requires constant stimulation.

The plant. A well-designed, well-built plant is easier to keep clean and free from disorder and hazards. Some essentials are:

1. Aisles of ample width, clearly marked.
2. Ample room to work.
3. Adequate and convenient storage for materials and tools.
4. Materials-handling equipment and methods that avoid congestion.
5. Ventilation to remove air contaminants—at the source where possible.
6. Floors and walls that require a minimum of maintenance.
7. Good lighting—well distributed artificial light; effective use of available daylight.
8. Personal service facilities—clean, up-to-date washrooms, lockers, and an inviting place where employees may eat lunch.

Organization. Maintaining orderly and hygienic working conditions requires an adequate crew of able-bodied men. They should be trained in their duties and provided with the necessary equipment and supplies.

Equipment

Vacuum cleaners. Heavy duty types are available in several models. Their usefulness is increased by a variety of attachments. In addition to floor cleaning, they are equally useful for removing

ing dust from corners and from places overhead.

Where dust sources are close together, a piped system may be practical. Cleaning implements are attached to inlets located at frequent intervals. Some hotels and office buildings use this type of dust removal.

For most industrial uses, portable vacuum cleaners are more satisfactory. Usually the dust sources are widely scattered and portable equipment meets all requirements.

Floor machines of several types can handle heavy jobs of floor cleaning. With them, floors can be scrubbed or dry-cleaned, waxed and polished. Like vacuum cleaners, floor machines can be obtained with a variety of attachments.

Crusts of dirt, oil and metal cuttings can be removed with revolving wire brushes much more quickly and thoroughly than by hand spudding.

For finer finishing, steel wool rolls can be used. A vacuum pick-up for collecting dust is an essential feature of dry operations. Suction in connection with a scrubber damp-dries the

floor quickly. Scrubbing, rinsing and drying can be done with a minimum of interruption to production.

Floor machines may be purchased or rented. Some manufacturers have service men who will train plant maintenance crews in cleaning methods.

Power sweepers are time and labor savers where large areas must be swept and the litter is relatively light. Some models are also used for sweeping up leaves and litter from the plant grounds and driveways.

Brooms, brushes, mops, etc., are needed in all plants to supplement the mechanized equipment. Tools of good quality are more durable and efficient and they encourage better work.

For dry sweeping, a wide cotton mop or a hair broom may be used. Oily mops may leave a dust-catching film.

Aisle marking. Wide clear aisles are signs of a well-kept plant. White lines are constant reminders to keep them free from obstruction and to pile stock within designated areas. The lines can be renewed quickly, neatly and economically with an aisle-marking machine.

Plastic film tape in white and colors is also used for marking aisles and storage areas. It is said to be durable and resistant to moisture and most chemicals used in industry. Lines can be changed and damaged parts replaced easily.

White, which has been adopted for highway traffic lines, is preferred for floor marking within the plant.

Trash containers at convenient locations throughout the plant help to keep litter off the floor. Containers with self-closing lids are best, particularly where oily rags and waste are stored. Containers may be painted a distinctive color to call attention to their presence.

Steam-cleaning units, which deliver jets of steam and cleaning solution under pressure, are used for cleaning many types of processing and fabricating equipment and removing stubborn deposits of dirt from floors, walls, and ceilings.

These units are available in both stationary and portable models.

Smoking areas are now provided in most plants. Receptacles which will

PLANT HOUSEKEEPING

Check Card—General Conditions

Keep it clean and keep it orderly. CHECK:

- | | |
|---------------------------|---|
| FLOORS
AND
STAIRS | <input type="checkbox"/> Dropped objects picked up |
| | <input type="checkbox"/> Scrap pieces in box |
| | <input type="checkbox"/> Oil, grease spills wiped up |
| | <input type="checkbox"/> Stock material out of way |
| PILES | <input type="checkbox"/> Good foundation—straight sides |
| | <input type="checkbox"/> Layers cross-tied |
| | <input type="checkbox"/> Break-down from top |
| AISLES | <input type="checkbox"/> Trucks |
| | <input type="checkbox"/> Hose and electric cord } not in aisles |
| | <input type="checkbox"/> Ladders, boxes, etc. |
| LOCKER
AND
WASHROOM | <input type="checkbox"/> Oily clothes and rubbish out of locker |
| | <input type="checkbox"/> Floor dry and clean |
| | <input type="checkbox"/> Newspapers, lunch scrap in waste can |
| FIRE | <input type="checkbox"/> Flammable waste in covered can |
| | <input type="checkbox"/> Fire equipment not blocked |

(See other side)



SAFETY INSTRUCTION CARD No. 29

National Safety Council

PRINTED IN U.S.A.

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not tip and spill their contents should be provided for cigaret butts and pipe ashes.

Supplies

Development of more efficient cleaning materials has kept pace with improvements in mechanical cleaning equipment. Much research has gone into the development of cleaning methods. Manufacturers can furnish helpful data on housekeeping and maintenance problems.

Detergents. Basically, water does the cleaning. But water alone is not always effective. It needs the aid of a detergent—soap, an alkali cleaning agent, or one of the newer synthetics. Soap is a detergent, but not all detergents are soaps.

There are three types of dirt: (1) Water soluble matter; (2) Oils and greases; (3) Inert solids.

A cleaner removes dirt by dissolving, emulsifying or suspending it.

Soap is one of the oldest cleaners and a most useful one. When used with hard water soap can be saved by the use of water softeners. Its worst defect is the formation of curds in hard water.

Synthetic detergents are derived from sources other than fats. Petroleum and coal-tar derivatives, and by-products of certain industries provide the raw materials. These cleaners are effective when used with hard water.

Alkalis, such as washing soda, soluble silicates and various phosphates, form the third class of cleaning materials. Compounds of these are marketed under a variety of trade names. They are useful for some types of cleaning where soap is not desirable. When used on floors they do not form a slippery film.

Care of Floors

Floors of all types have longer life if properly cared for. A protective coating of some type is desirable.

Hardwood flooring in its natural state dries out and cracks and splinters under traffic. Scrubbing raises the grain of the wood and excessive moisture causes it to swell and warp. For protective coatings, sealers, enamels and varnish are used. Sealers penetrate the wood and produce a durable finish.

Concrete, while resistant to moisture, has a tendency to dust under traffic.

HOUSEKEEPING NEEDS

Vacuum Cleaner — Heavy duty with attachments
Floor machine—Sizes, types and attachments for every plant
Brooms, brushes, mops, sponges
Cheesecloth
Rubber gloves
Bowl and urinal swabs
Soap and detergents
Disinfectants and deodorants
Wax—Suitable for type of floor
Oil absorbent

CONDITIONS CAUSING FALLS

Falls are the second largest cause of accidental death. Watch for these hazards:



- Slippery, wet, oily and worn floors
- Ice and snow on walks and platforms
- Stumbling hazards
- Loose material under foot
- Worn or broken treads on stairs
- Insecure scaffolds and platforms
- Stairs, scaffolds and platforms with no handrails
- Defective ladders or ladders not suited to the job
- Open elevator shaftways
- Unguarded floor openings and manholes



SAFETY INSTRUCTION CARD No. 185
National Safety Council PRINTED IN U. S. A.

This can be checked by treating with a sealer. If color is desired, a penetrating dye or a floor enamel may be used.

Linoleum, asphalt tile and rubber tile have an impervious and decorative surface. Care consists of cleaning and preserving this surface. As little water as possible should be used in cleaning.

Wax protects the surface and preserves appearance. It makes regular maintenance easier by keeping dirt on the surface instead of being ground into the floor.

Water emulsion (self-polishing) wax can be used safely on all types of floors. Buffing waxes contain solvents which injure asphalt and rubber.

Self-polishing waxes are considerably less slippery than buffing waxes. Tests have been made to determine the frictional resistance of various floor finishes on different types of floors.



Light-weight applicator for applying aisle-marking tape to floor areas. (Minnesota Mining & Manufacturing Co.)

However, it has not been found possible to give any finish a rating which would apply for all surfaces and all conditions.

For floor scrubbing the cleaner should do the work without leaving a slippery film. Soap is permissible for such surfaces as concrete, common brick, wood block and mastic. For marble and smooth tile a cleaning powder that does not leave a slippery residue should be used.

Strong alkalis and coarse abrasives are injurious to many types of floors, and usually milder cleaners will be effective.

Oil absorbents. Around machines and other places where oil and grease accumulate, hazardous and unsightly conditions develop. Oil spills should be cleaned up promptly. Use of a non-combustible absorbent compound makes it easier to keep floors clean.

Absorbents are available in two types—one for oils and grease; the other an all-purpose absorbent where water and other liquids are present. They are much more effective than sawdust, waste or rags.

Tests by Underwriters' Laboratories have rated the effectiveness of these compounds in absorbing oil and grease and from the standpoint of fire safety. They are not subject to spontaneous heating unless the absorbed oil has that quality.

Oil-soaked garments, shoes, ropes and belts can be dry cleaned by burying in the compound.

Disinfectants and deodorants are useful, particularly for washrooms and garbage cans. They are not substitutes for detergents.

Odors may indicate either unsanitary conditions or merely a nuisance. They should be removed if possible but a deodorant may be needed at times.

Sweeping compounds keep down dust from sweeping. The combustibility of the compound should be noted.

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Your Floors Can Be Safer—N. S. News, Apr. 1952, p. 36.



That means waxes containing Du Pont "LUDOX"

In growing numbers, hospitals and other institutions are turning to new anti-slip waxes containing Du Pont "Ludox" colloidal silica. Invisibly tiny particles of "Ludox" provide new walking safety.

Waxes properly formulated with "Ludox" have extra film hardness. They are fully equal to the best of floor waxes

in gloss, water resistance, leveling, and other desirable properties. With all these advantages, you can see why waxes containing "Ludox" are specified by more and more safety and maintenance engineers.

If you are not already using anti-slip waxes containing "Ludox," ask your supplier about them. Or, if he cannot supply you with a wax fortified with "Ludox," consult E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., 4147-N Du Pont Bldg., Wilmington 98, Del.

How "LUDOX" gives slip resistance

As the foot presses on the waxed floor, submicroscopic particles of "Ludox" (so small that there are more than 300 trillion under the heel alone) press into larger, softer wax particles. This provides a unique snubbing action... helps keep the foot from slipping.



BETTER THINGS FOR BETTER LIVING

... THROUGH CHEMISTRY

LUDOX

REG. U. S. PAT. OFF.

Colloidal Silica

Color's Many Uses

COLOR applied scientifically, chiefly through the medium of paint, makes these important contributions to the industrial plant:

1. Efficient use of light
2. Improved visibility
3. Pleasant and restful surroundings
4. An incentive to better housekeeping
5. Identification of fire and accident prevention equipment and hazards
6. Instructional and warning signs

Psychology of color. Certain colors are known to arouse definite mental and emotional responses. Familiar colors and the usual reactions to them are:

1. Yellow—Cheering and stimulating.
2. Blue—Cool; desirable where temperatures are high.
3. Green—Restful to the eyes. Blue-green gives a sensation of coolness. Yellow-green has more warmth.
4. Red—Danger, excitement.
5. Orange—Combines red and yellow; a bright, warm color which should be used with discretion.
6. Violet and purple—Rich colors implying luxury.

Background Colors

Paint companies have developed color schemes for industrial interiors which conserve light yet provide more cheerful and attractive interiors than the old plan of mill white for ceilings and upper walls and "practical" colors for dados and machines.

Sharp contrasts in bright and dark areas cause eyestrain because of the continual adjustment of the eye.

White is widely used for ceilings because it reflects more light—80 to 88 per cent. For rooms with low ceilings, or where people frequently look up at them, as in hospital rooms, a color of lower reflectance, such as cream, ivory or sky blue, is preferable to dead white.

Colors of high reflectance are also suitable for overhead networks of girders, pipes and other equipment.

Soft tints, such as light gray, pale green and light blue, are suitable for sections of walls in the range of vision. Soft gray, for example, is restful and does not show dust.

A dado the height of work benches and machines, or about one-third the height of the wall, makes stains, soil and marks less conspicuous. It may be a deeper tone of the color used on the upper wall but should not be too dark.

Floors should have a reflectance value of 25 per cent or more. For machines, desks, etc., 25 to 40 per cent is suggested.

Point of Operation

To make it easier to see the work and to avoid injury, paint is used to spotlight the point of operation. The body of the machine is painted in one color and the working areas in a lighter tint.

Four shades of gray, ranging from light to dark, are standard colors for machines. Critical parts should stand out in cream, light tan, or other light contrasting colors.

Light sources and color. Type of light source should be considered in selection of colors. Incandescent lamps tend to reduce strength and intensity of color because of a slight yellowing effect of the light.

Fluorescent light is of three types—white, daylight and soft white. Daylight units give a bluish hue and can be used with blue, green and blue-violet. White and soft white units produce a warm light suitable for ivory, cream, beige, rose and tan.

Neutral gray can be used with incandescent, fluorescent or mercury light.

Color for Identification

Safety codes for the use of standard colors for identification of equipment and hazards have been developed by the American Standards Association. *Safety Color Code for Marking Physical Hazards and the Identification of Certain Equipment Z53.1—1945* specifies uniform colors for marking physical hazards, for indicating the location of safety equipment, and for identifying fire and other protective equipment.

1. **Red** is recommended for identification of fire protection equipment, and for walls or supports on which extinguishers are mounted; flammable liquid containers (except shipping containers) on which the name of the contents should be stenciled; lights at barricades and danger signs; emergency stops on machines such as rubber mills, wire blocks, and flat work



Effective use of color in a machine shop. Light walls and ceiling reflect large percentage of light. Machines are in green, points of operation in ivory or buff. Orange and red are used for switches and wheels. (Pittsburgh Plate Glass Co.)

ironers; and emergency stop buttons for electrical switches.

2. **Yellow** has high visibility and is recommended for marking hazards that may result in slipping, falling, and bumping into objects. Solid yellow, and stripes and checks of yellow and black, may be used to attract special attention. Top and bottom treads of stairways, low beams and pipes and crane hooks are places where yellow may be used.

Black and yellow stripes are often used on mobile equipment, such as tractors and industrial locomotives.

3. **Green** in combinations with white, such as a green cross on a white background, is used to designate the location of first-aid and safety equipment. Location of stretchers, gas masks, and bulletin boards is identified by this color.

4. **Black and white**, and combinations of them in stripes or checks, are used for housekeeping and traffic markings.

Use of three additional colors is proposed in a revision of this code:

1. **Orange** has special attention value and is proposed to highlight hazardous parts of machines or electrical equipment, such as exposed cutting edges, the inside of removable guards, and doors and covers to switch boxes.

2. **Blue** on signs is suggested to designate caution against starting or moving machines being worked upon. Signs would be located at the starting or power sources of elevators, electrical controls, valves, tanks, and similar equipment.

3. **Purple** is suggested to identify radiation hazards, such as radio-active materials in rooms and containers.

Yellow is to be used with purple for tags, signs, and similar means of identification.

Piping Systems. The American Standards Association's Code, *Scheme for the Identification of Piping Systems A-13, 1928*, recommends use of the basic colors of red, yellow, etc., in a simplified plan for piping systems. The code does not apply to pipes buried in the ground, pipes used in electric conduits, or piping which carries solids either in gas or air.

Contents of pipes are classified as follows:

Fire protection	Red
Dangerous	Orange or Yellow
Safe	Green
Protection materials	Bright Blue
Valuable materials	Purple

(Use of orange, blue and purple has not yet received official approval.)

The color may be applied the entire length of the pipe or in bands 8 to 10 inches wide near valves, pumps, and at repeated intervals along the line. The name of the specific material is stenciled in black at readily visible locations at valves, pumps, and similar places.

—To page 26



Which suits your safety needs best?



FERROX

You get low-cost coverage with Ferrox, 40 feet to the gallon . . . costs $\frac{1}{3}$ as much as fabric-backed floor coverings. Goes down fast, too. Just open the can and trowel it on. Ferrox provides non-slip grip . . . resists oil, chemicals and weather conditions. Especially suitable for concrete floors in washrooms, ramps, platforms, around machine areas or wherever there is a shipping hazard.



FERA-MAT

Resin bonding agent and diamond-hard mineral granules give Fera-Mat long life. Its extra traction minimizes lost motion and fatigue. Fera-Mat covers large floor areas in a hurry. It peels like adhesive tape, installs quickly and stays safe! Especially applicable for clean, smooth floors where speedy installation is required.



FERALUN

Made of cast iron matrix, Feralun treads and thresholds have a diamond-hard abrasive in the walking surface. And for a tough floor job that never needs maintenance, ask about Feralun floor plates, too. Architects, safety engineers and building owners know that Feralun takes toughest punishment. Proof? Millions of feet of long-lasting treads and floor plates are on the job all over the nation. What's more, Feralun is economical because it lasts for the life of the building.

THESE THREE top-quality safety flooring materials and treads are problem-solvers. Each is designed for specific job requirements. Each has been proved in thousands of installations. *Don't slip up on safety!* Write for American Abrasive's Fact Folder on Safety Floorings.

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ABRASIVE**

Safety Floorings

AB-112

AMERICAN ABRASIVE MATERIAL CO., 440 COLT ST., IRVINGTON, N. J.

98% of ALL accidents are PREVENTABLE



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and an application of
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SURE-FOOT
NON-SLIP
ABRASIVE PAINT
STOPS SLIPPING ACCIDENTS

Why pay out compensation for accidents when you can prevent them! Lay the groundwork for safer workmanship today... paint those slippery areas where falls occur with SURE-FOOT, Frost's non-slip abrasive paint. Low in cost... easy to use. Paint it on... let it dry... leaves a tough, non-slip finish that resists water, oil, or grease.

Paint SURE-FOOT on your "danger areas"... loading platforms, shower rooms, around machines, stairs and washrooms. SURE-FOOT adheres to steel, aluminum, wood or concrete. Comes in four eye-easing colors... gray, red, black, yellow and green. Take steps to safeguard dangerous fall areas TODAY.

Keep your employees SURE-FOOTED... on the job.

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In Canada: Safety Supply Co., Toronto 1, Ont.
Write Dept. B for the name of the one nearest you.

Frost PAINT AND OIL CORPORATION
MINNEAPOLIS 13, MINNESOTA

Color

—From page 24

Color stripes painted at the edges of the color bands may also be used to identify the exact contents of lines, but this is less satisfactory than stenciled identifications. Labels for marking piping, which conform in color and size of letter to the code, are on the market.

Acids and alkalis cause many paints to change color. Paints exposed to moisture and chemical action should be carefully selected.

Types of Paint

Paints, enamels and lacquers provide a medium for the practical application of color. Industrial finishes are often subject to severe exposures and many types of paint have been developed for special needs.

Floor coatings. Synthetic enamels and rubber base floor coatings give better service on concrete than ordinary floor enamels and are more resistant to moisture, acids and alkalis.

Light-colored floors conserve light. They may be stippled with darker colors to avoid glaring contrasts.

Water-thinned paints. Cold water paints (casein and synthetic resin types) are lower in price than oil paints and satisfactory for some industrial interiors. They can be applied with spray-coating equipment. They are washable but less durable than other types of paint.

Rubber-base, water-thinned paints are more durable and will stand considerable washing.

Luminescent materials (paint, tape and plastics) become luminous in complete darkness after exposure to natural or artificial light.

Fluorescent materials glow only while exposed to ultraviolet light. There is no usable afterglow. These materials are used where it is desirable for the eyes to be adapted to darkness, as in instrument dials, night flying and driving, and where electric power is available for producing light. They enable the operator to observe readings without glare or eye fatigue.

Phosphorescent materials glow after exposure to light and remain luminous after the light is extinguished. They are observed best under total or near-total darkness. The low intensity of the glow

PAINT REFLECTION VALUES (New Jersey Zinc Co.)

	Per cent
White	88
Cream	69
Ivory	67
Sky blue	65
Pale green	59
Buff	52
Aluminum	41

makes them suitable only for close viewing in darkness.

Reflecting coatings and buttons are effective where headlights, flashlights, cap lamps and similar sources of light are available.

Rust prevention. Paints which form a tight bond with clean metal offer considerable protection against rust and corrosion. When rust has started, ordinary paint is ineffective because corrosion continues under the paint film. Rust-sealing coatings, both clear and pigmented, are often helpful.

Work Furniture

WELL-DESIGNED work furniture prevents much unnecessary fatigue. For health, comfort and efficiency, work surfaces should be of correct height. Chairs should be adjusted to the needs of the individual.

Alternate periods of sitting and standing at work are desirable. Since this is not always practicable, furniture should be planned for maximum comfort and efficiency.

Work-benches. Height of work surfaces, such as benches, machines, tables and assembly lines is determined by whether the workers sit or stand. Another factor is whether the hands or the eyes are more important to the operation.

Tilted or recessed tables facilitate some types of work.

Chairs. Height relationship between seat and work is important. Workers differ quite widely in height and proportions and seat height should be adjusted accordingly.

Following are essential qualities for factory chairs:

1. Is it comfortable?
2. Is it safe?
3. Is it easily adjustable?
4. Is it economical to maintain?

A chair should provide back support. Without it the worker uses much energy just sitting erect. The back rest supports the back between the lower ribs and the hips.

A deep form-fitting seat, of the tractor, bucket, or western saddle type, is better than one that is flat or slightly curved. The seat should not touch the tendons and blood vessels on the back of the leg just above the knee.

Too soft a seat is not desirable. Comfort is more important than upholstery.

Edges and corners should be rounded to avoid damage to clothing or injury to persons.

Foot rungs shorter than the foot spread of the chair lessens possibility of tipping, particularly on the higher chairs.

A posture chair must be adjusted to the individual's need or most of its benefits will be lost. The user should also be taught to sit properly.



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in sales and value!**

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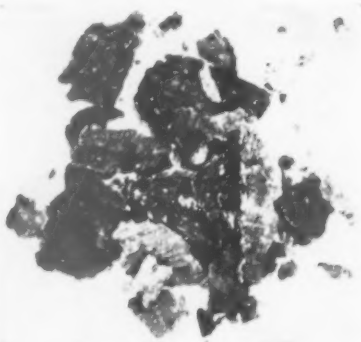




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ZORBALL



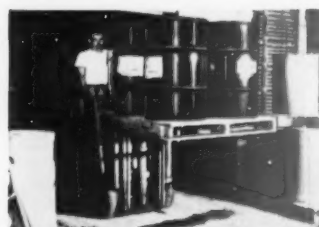
COMPETITIVE PRODUCT

Wet absorbents after 2 hours' heavy traffic

NOTE: Zorball still granular! Continues to be nonskid, safe, still usable. Easily swept from floor with ordinary brush!

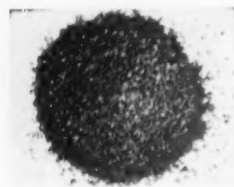
Competitive product is slippery, caked mud! Very dangerous, difficult to remove. Metal scraper needed to remove this sample!

POSITIVE PROOF! Zorball is the safest, lowest-cost floor absorbent known!



Test samples of Wyandotte Zorball and a well-known competitive absorbent sold for all-purpose use were placed in this busy runway. For 2 hours heavy trucks pounded over them. Results shown above and below.

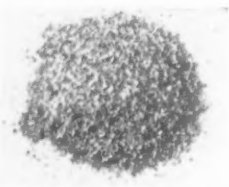
These pictures are proof that Wyandotte Zorball is the *safest* floor absorbent because it *resists breakdown*, retains nonskid properties as long as it's on the floor. This long life makes it the *lowest-cost* absorbent, too: *less* Zorball is required to do the job! Your Wyandotte representative can prove this by demonstration on your floors. Call him today. Wyandotte Chemicals Corporation, Wyandotte, Michigan; also Los Angeles 12, California.



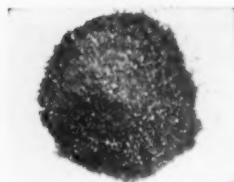
ZORBALL

ABSORBENTS BEFORE USE

Most absorbents look good when first put down. Both products were screened for these tests and the coarser particles used.

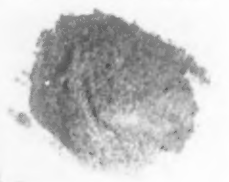


COMPETITIVE PRODUCT



DRY ABSORBENTS AFTER 2 HOURS' HEAVY TRAFFIC
ZORBALL, left, still granular. Retains nonskid properties!

Competitive product, right, is powdered dust. Has lost nonskid properties completely!



Wyandotte CHEMICALS

Helpful service representatives in 138 cities in the U. S. and Canada

Largest manufacturers of specialized cleaning products for business and industry

Office Layout

FOR EFFICIENCY, convenience and safety, good layout is important in the office as well as in the factory. Many of the same principles of workflow apply equally to both.

Light, ventilation, washrooms and other employee services are important for any type of employment.

Housekeeping is important from the standpoint of appearance of surroundings and the consequent effect on morale, as well as for health and avoidance of slipping and tripping hazards.

The following basic details should be considered:

1. Work should flow through the office with a minimum of backtracking.

2. The transportation distance of work should be at a minimum. If possible, desks should be so arranged that each worker will receive his work from the person behind or beside him.

3. Employees using the same machine should be grouped.

4. Noisy machines should be segregated wherever possible. Even where noise is not considered excessive, use of sound-absorbing materials on ceilings may be desirable.

5. Desks should face in the same direction, unless two employees are working together, in which case they may face each other.

6. Employees should not face windows, unshielded lamps, or other source of glare.

7. If the office depends largely on daylight, employees engaged in the most exacting visual work should be located nearest the windows. North light is preferred by artists and draftsmen. With modern lighting systems, this has become less important.

8. Those who have frequent callers should be near entrances.

9. Employees should be placed in front of or around the person having supervision over them.

10. Aisles should be at least 4 feet wide.

11. For desks facing in the same direction, distance between the back of one desk and the front of another should be at least 3 feet.

12. Files should be placed against walls or railings, if possible.

13. Exceptionally heavy equipment should be placed against walls or columns.

14. Where private offices are necessary they should be planned to avoid cutting off natural light and ventilation from persons working in adjoining rooms. In offices with controlled conditions of light and ventilation, this problem is not important.

15. Floor maintenance should be given special attention. It is possible to keep floors attractive without creating slipping hazards.

16. Electric outlets and extension cords should be arranged to avoid tripping hazards.

17. Glass doors should be painted with some conspicuous design near eye level to prevent persons walking into them.



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tread-sure

the brush-applied abrasive floor coating

Tread-Sure is an abrasive-filled brush-coating, simple and inexpensive to apply on any size area. It produces a long-wearing slip-resistant surface on wood, concrete or steel. Tread-Sure maintains traction and resiliency and is comfortable to stand on, providing a safety footing. For exterior as well as interior use. Three non-glare colors . . . battleship grey, red, green.



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NS-53

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A Place for the Handicapped

ONE of the luxuries of so-called normal times is a high physical standard for employment. It is a luxury which is one of the first casualties of a short labor supply.

Fortunately, most companies are in a position to lower their general standards without serious harm—provided that they substitute for an over-all high standard, an intelligently selective program which places the handicapped worker where he can work safely and productively.

The truth of this statement is borne out by the fact that many companies, even in days of plentiful labor supply, have willingly—sometimes enthusiastically—accepted workers with serious physical defects.

This is not, most emphatically, any justification for a collapse of intelligent use of physical data in placing the worker. There are, to take an extreme example, thousands of jobs which demand 20-20 vision. But there are literally thousands of industrial positions for which the totally blind have proved their suitability. We need more, not less, eye-testing in industry, but we also need to review our standards to adjust those which are higher than needed for a particular job.

There are few people so seriously handicapped physically or mentally as

to be permanently unemployable. But there are probably fewer people who are physically up to reasonable standards for every job. The handicapped employables are not a small group—they are the great majority of all Americans.

The more dramatically handicapped—the blind, deaf, and crippled, the amputees and the people with bad hearts, the neurotic and the sufferers from chronic illnesses and sensitivities—have been studied many times. The body of statistical evidence seems to show that such people, when properly placed, are productive workers, safe workers, desirable members of a plant force.

Proper placement for these people demands, first of all, a thorough knowledge of the work operations and the working conditions of each occupation in the plant. This knowledge should be evaluated by qualified specialists—production men, personnel men, safety men, and medical personnel. Physical requirements for each occupation should be established individually, and they should be as strict as needed—but not a bit more strict.

This information should be assembled into easy reference form for the use of the personnel office in the employment interview and in the final placement following medical examination.

It is important that supervisors be made aware of the importance of any limitations placed on the types of work an individual may do safely. The formal transfer of a worker from one job to another is only the most obvious situation in which this point should be considered. There is, on the shop floor, a constant temptation to shift men and work operations quickly to meet temporary or changing situations. No amount of personnel-office record-keeping will prevent misassignment and resulting serious hazard in such situations, unless supervisors are made strongly conscious of the need of observing all restrictions on the work operations of handicapped employees—and unless they have at hand, in the department, the information on these restrictions for each employee.

As a corollary of this point, a systematic method of conveying the information from department to department in cases of transfers must be established.

One objection to the employment of handicapped workers is that a disability may be aggravated, or spurious claims of aggravation may be made, involving the company in increased compensation costs.

There are, of course, many types of handicaps which, for any particular type of operation, may be aggravated. Workers so handicapped should not be employed in those operations.

The best defense against fraudulent claims—and incidentally the studies of the subject do not bear out the fear that compensation claims are usually increased—is a sound physical examination, which definitely documents the physical status of the worker at em-

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FOR ALL FLOORS... a revolutionary new free-rinsing neutral cleaner for all floors, paints, and other tough cleaning jobs. Cleans equally well in hot or cold, hard or soft water. Dilute with as much as 40 parts of water, then just mop on, mop off. Eliminates scrubbing... deodorizes as it cleans.

FRANKLIN'S RUBBER GLOSS WAX... a tough, long wearing, self-polishing wax. Cuts maintenance costs on linoleum, rubber, asphalt tile, wood, etc. Withstands water and damp moppings indefinitely. Classified by Underwriters' Laboratories as anti-slip.

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The Only Complete System of Safety Floor Maintenance— LEGGE Protects Against Slip-Accidents *Saves Money — Adds Beauty*



Polished floors don't have to be slippery

The Legge System reduces slip accidents by as much as 95%. Permits a saving on your budget, too . . . up to 50% on materials, up to 25% on labor.

Ask a Legge Safety Engineer to set up a Maintenance System especially designed for your needs. No obligation—no charge for this service. Write us today.

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TEXINOL: An all-purpose concentrate for surfaces which cannot be harmed by water. Cleans thoroughly, economically, leaving no slippery film on floors.

CLEANER #1: A primary cleaner for vigorous scrubbing before polishing. A concentrated paste compound that cannot mar surface or bleach color.

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TRAFKO CLEANER: A slip-resistant solvent that prepares floors to be polished with TRAFKO. Removes dirt, old wax and rubber burn marks.

SPIRKO CLEANER: A slip-resistant solvent that prepares floors to be polished with SPIRKO.

Other cleaners available for specific requirements.

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LECO: For linoleum, rubber, asphalt tile, cork, linotile, similar resilient floors. Gives high slip-resistant finish despite attractive gloss. Protects floors with durable film. A water-emulsion polish.

SAFCO: For asphalt tile floors. A water-emulsion polish with higher slip-resistance for harder surfaces. Apply either LECO or SAFCO with a mop.

TRAFKO: For wood, cork, linoleum floors. A solvent, tough-wearing polish, ideal for heavily trafficked floors. Slip-resistant.

SPIRKO: For wood floors. A spirit polish that buffs to a smooth sheen. Dust resistant. Provides unusually high safety factor.

FLOOR SHINE: For terrazzo, marble, travertine, quarry, tile, other hard-surface floors. Combination cleaner and slip-resistant polish. Also effective as secondary maintenance on other polished floors.

Other Safety polishes available for specific requirements.

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Seal your floors against dirt and deterioration with these Legge products:

CEMENT SEAL: A penetrant that prevents dusting.

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WOOD SEAL: A durable seal and surfacer for fine wood and gymnasium floors.

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GRIPTEX: A slip-resistant powder sprinkled on floors made slippery by temporary wet or oily conditions.

GUMROK: A safety paste applied at all slip hazard points. Bites through spillage of oil, grease, water. In red, brown, black, green.

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DAMP SWEEP TOOL: The first implement especially made for damp sweeping. Patented double swivel gives complete maneuverability. Makes it easy to sweep under chairs, desks, other objects.

CLOCLAMP: A lightweight one-piece device for easy damp sweeping. Fits over your present broom handle, holding cloth in place.

FLOOR MACHINE: A scrubber and polisher effective on all types of floors. Gives an even finish. Waterproof. Operates with minimum noise. Working parts guaranteed for 5 years.

NOSTAT: A grounding device that protects personnel against static charges. Clamped on sole of shoe, connected by lead chain to leg garter.

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Just fill out and mail the coupon for a FREE copy of "Mr. Higby Learned about Floor Safety . . . the Hard Way!" It's full of important information about your floors.

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NOW make metal, concrete, and wood floors, staircases, areas around machinery and loading platforms SLIP-PROOF—WET OR DRY.

R-MIR-DEK NON-SLIP COATING is the only lightweight safety floor coating that is fire retardant, anti-corrosive, easily applied, and oil, grease, alkali, and acid-resistant. Compounded of durable phenolic resins and polymerized oils with everlasting aluminum oxide granules added.

R-MIR-DEK applies with square edge trowel to all types of floor surfaces. It may be thinned for spraying, and brush type formulas are also available.

FREE: 2-color R-Mir-Dek brochure describes this lightweight safety floor coating. Write to Department NSN-3.

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Goes a long way, to save money in keeping floors, benches, stairs and docks dry, clean and safe. Cal-Flor-Dry absorbs 120% of its own weight in oils (including soluble), grease and other liquids. Does not mush down—is not abrasive—does no harm to machinery—is uniform in granulation. For these reasons, every year shows a substantial increase in its use. A little goes a long way.

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OR WRITE DIRECT.



The FLOR-DRY Company

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ployment and at intervals during his employment.

A number of agencies are ready to serve the employer who is considering employing conspicuously handicapped people. There are state and federal rehabilitation agencies which have information on the capabilities of the handicapped generally, and also contact with handicapped individuals who have profited from rehabilitation training.

The results of this training are often spectacular. One member of the National Safety Council staff recently had the experience of being taught to operate a metal-working lathe while blindfolded—his teacher being a man who had never seen the machine which he knew so well—a blind man who was taught and became himself a teacher after losing his sight.

It is probably not necessary to warn against the hazards of ill-advised placement of handicapped workers. The man with a bad heart or one glass eye does not belong on a ladder or a scaffold. The hernia sufferer must be kept away from lifting jobs. The mal-nourished don't thrive on pick-and-shovel work, and the overweight are poor risks on jobs calling for much running or stair climbing.

There was a time, perhaps, when industry could afford the luxury of being hard-hearted about the more conspicuously handicapped. Standards could be set standards that would keep them out of the plant—if their handicaps were discovered.

But that time is gone. We need men and women to do our work. It is more difficult to discriminate between handicaps and to set accurate standards for jobs than it is to make blanket pronouncements. But it is a necessity today.

Waterproof Covers

Waterproof covers are often needed to protect material and equipment against water damage in case of fire. They are also useful for other emergencies such as leaks in piping or when rain enters through broken windows or torn roofing during severe windstorms.

In addition to the familiar tarpaulin, waterproof covers of vinyl plastic sheeting are used for some purposes. These covers are non-conductors of electricity and are transparent enough for easy visibility of work to be done. They are sometimes used by public utility companies for protecting linemen's repair work. They are also used for covering boats and trucks and for other specialized uses.

Goggles, Too

Employee was welding with an arc welder, wearing helmet. A piece of slag popped, flew under the hood, exploded again and flew into left eye, according to an accident report. That's why some companies require goggles in addition to welding helmets.



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MARK
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the modern, economical oil and grease
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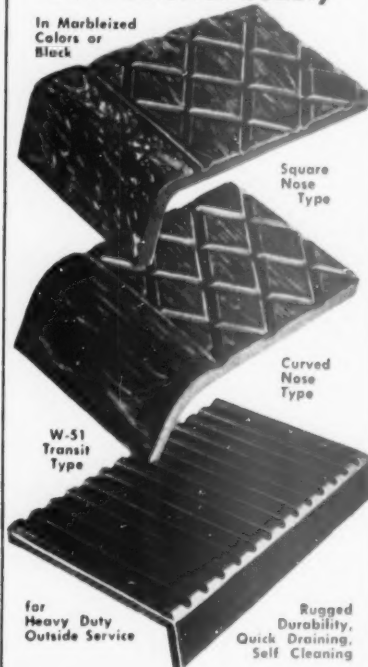
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Preparing for Disaster Control

Excerpts from an address by A. D. O'Connor, Regional Director, Federal Civil Defense Administration, Natick, Mass., before the 22nd Annual Safety Convention, Greater New York Safety Council.

IF WE build up our military defense but neglect our civil defense, we are gambling with the funds spent on civil defense and with the safety of the nation. Creation of a strong defense organization within our industrial plants is an essential part of the plan for the defense of the nation.

Protection of industrial production is essential to survival in the event of war. A disaster control plan is actually a plan to be carried out in an emergency to control the effects of disaster and to restore the plant as quickly as possible.

First of all, management is responsible for organizing civil defense groups in plants. However, the local civil defense organization should be contacted before the organizing actually takes place. A plant civil defense plan which is not closely tied in with the local plan will not be efficient. Valuable help can be obtained from the local civil defense director.

A good place to start in organizing the group is with an employee-management committee, if one exists. If not, such a committee should be formed.

An example of a company prepared for disaster was the case of the Minnesota Mining and Manufacturing Company, St. Paul. A terrific blast wrecked a six-story building. It knocked out the entire telephone system, smashed windows over a wide area, killed 14 workers and injured 51. Here was a situation that normally would have created panic and confusion among the plant's 4,000 employees. But what happened instead?

The plant's emergency organization sprang into action. Control headquarters was set up nearby. Every phase of evacuation, rescue and relief activity was put into effect. Key men had two emergency telephone lines in operation. Ambulances, doctors, nurses, police, and the clergy were called. Meantime, undamaged buildings were being evacuated, and in eight minutes the 4,000 workers had left the affected area. Portable loudspeakers proved invaluable in instructing personnel.

No single aspect of an over-all emergency plan was overlooked. Besides evacuation, rescue, and care of the injured, trained key men took care of public relations and notified the families of the dead and injured, installed additional telephone lines, recovered personal belongings from the stricken area, and took care of scores of other welfare duties. Within five days, operations were resumed at the plant, except, of course, in the wrecked building.

A good example of foresight and in-

genuity is the West Hudson Council Mutual Aid Civil Defense Program. The leading industries of the area have agreed to lend each other fire-fighting, demolition, and first-aid equipment in any emergency, in peace or war. Duplicate lists of equipment in member plants are on file in the office of each plant security chief. Each plant has established emergency services, such as warden, medical, police, engineering, maintenance, and fire.

A detailed national plan has been set out in the Federal Civil Defense Administration publication, "Civil Defense in Industry and Institutions." Following is an outline of the steps to be taken:

1. Choosing the right coordinator is the first step. In every plant there is an individual with executive ability, who has the confidence of both management and employees, who can take complete charge of the situation. There can be no divided authority. For specialized information and guidance he can call upon outside consultants, such as representatives of casualty and fire insurance underwriters.

2. Make a survey of plant buildings and shelter requirements. A manual issued by the FCDA, "Methods for Determining Shelter Needs and Shelter



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Areas," tells what to look for and what to avoid:

(a) Any area selected as potential shelter should be in the center of the building, away from outside exposure. "Outside" includes courts and light shafts.

(b) Areas should be in a part of the building that is structurally compact, with close spacing of columns and short-span beams.

(c) They should be out of direct line with doors, windows and hallways exposed to the outside.

(d) Walls and doors surrounding the area should be free of glass.

(e) There should be at least one interior stairway, not adjoining an outer wall.

(f) Areas should contain no furnaces or boilers, and no large steam, water or gas pipes.

(g) The ceiling should not be of the hung or suspended type, or have heavy lighting fixtures or plaster ornaments.

(h) The area should be as free as possible of furniture, stored merchandise or equipment of any kind.

(i) There should be no safes, banks of filing cabinets or heavy machinery on the floor above.

Not many areas meet all these requirements so it may be necessary to pick the best space available. Hallways, corridors, fire stairs, rest rooms and elevator lobbies in the center of buildings are good locations, if free of glass.

3. Select, train and assign emergency protection personnel. These include wardens, police, firemen, engineering and rescue workers, medical and welfare workers. Local civil defense organizations have conducted many such training courses. The state of New York has an excellent school. The FCDA has a staff college at Olney, Md., and a training school at Ogontz, Pa.

4. Make a floor plan showing branch control rooms, first-aid stations or cabinets, fire extinguishers and other equipment, elevators, stairs, emergency lights and exits, and a general traffic plan within the plant.

5. Post directional and information signs, including evacuation instructions, in offices and other places of assembly.

6. Provide emergency supplies in shelter areas, such as first-aid kits, water supplies, and emergency lighting. All persons assigned to civil defense tasks should be provided with civilian defense identification, such as arm bands.

Exit drills should be held frequently and include all employees. The first few drills should be announced in advance. When routine procedures have been established, drills should come at irregular intervals without warning. These drills will uncover weakness in planning, coordination and communication. After each drill the coordinator can hold a meeting with key personnel to discuss weak spots.

In general, the functions of the plant protective services are:

1. To direct workers to safety.
2. To rescue trapped persons.
3. To render first aid.

—To page 44



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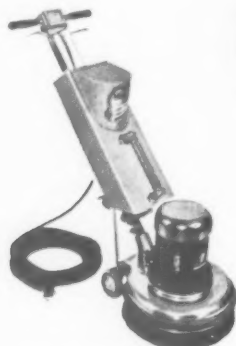
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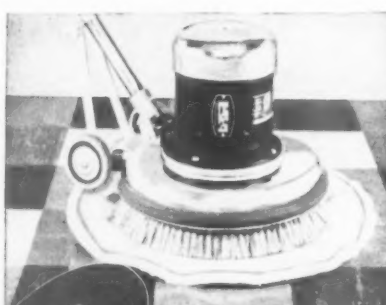
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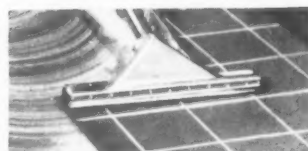
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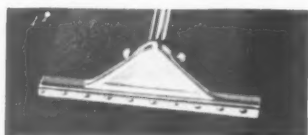
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Portable Ladders

EVERY industrial establishment has operations which involve getting from one level to another. Where frequent access to any location is necessary, stairways, ramps or fixed ladders are desirable.

For occasional access to different points, portable ladders are needed. They are particularly important in maintenance and construction work.

Few accidents are caused by ladders which are defective when purchased. However, ladders which are too light or otherwise unsuited to the job are sometimes purchased. Neglect and abuse of sound ladders, and unsafe practices by the user are frequent accident causes.

In selecting ladders for industrial use, a reliable guide is the *American Standard Safety Code for Portable Wood Ladders, A14.1-1952*. Ladders built according to code specifications are plainly labeled.

Metal ladders are not covered by an American Standard Code. However, those marketed by reliable manufacturers meet exacting tests. The Metal Ladder Manufacturers Association, organized in April 1949, has established standards for this equipment.

Subcommittees of the American Standards Association have been organized to formulate drafts of standards for Metal Ladders and Fixed Ladders.

Definitions

Following are types of ladders commonly used in industry as defined in the American Standard Safety Code, 1952 revision:



Two-section extension ladder and ladder shoe.

1. **Step Ladder.** A self-supporting portable ladder, non-adjustable in length, having flat steps and a hinged back. Its size is designated by the over-all length of the ladder measured along the front edge of the side rails.

2. **Single Ladder.** A non-self-supporting portable ladder, non-adjustable in length, consisting of but one section. Its size is designated by the over-all length of the side rail.

3. **Extension Ladder.** A non-self-supporting portable ladder adjustable in length. It consists of two or more sections traveling in guides or brackets so arranged as to permit length adjustment. Its size is designated by the sum of the lengths of the sections measured along the side rails.

4. **Sectional Ladder.** A non-self-supporting portable ladder, non-adjustable in length, consisting of two or more sections so constructed that the sections may be combined to function as a single ladder. Its size is designated by the over-all length of the assembled sections.

5. **Trestle Ladder.** A self-supporting portable ladder, non-adjustable in length, consisting of two sections hinged at the top to form equal angles with the base. Size is designated by the length of the side rails measured along the front edge.

6. **Extension Trestle Ladder.** A self-supporting portable ladder, adjustable in length, consisting of a trestle ladder base and a vertically adjustable single ladder, with suitable means for locking the ladders together. Size is designated by length of trestle ladder base.

7. **Special-Purpose Ladder.** A portable ladder which represents either a modification or a combination of design or construction features in one of the general purpose types of ladders previously defined, in order to adapt the ladder to special or specific uses.

8. **Trolley Ladder.** A semi-fixed ladder non-adjustable in length, supported by attachments to an overhead track, the plane of the ladder being at right angles to the plane of motion.

9. **Side-Rolling Ladder.** A semi-fixed ladder, non-adjustable in length, supported by attachments to a guide rail, which is generally fastened to shelving, the plane of the ladder being also its plane of motion.

Materials and Construction

Wood, which meets the requirements of weight and strength at moderate cost, is the most widely used material. Acceptable kinds and grades of wood are listed in the Code.

Ladders may have either spreading or parallel straight lines. They may have sides flaring at the base to increase stability, and converging at the top for specific uses.

Light Metals. Alloys of aluminum and magnesium alloys are light in weight and resistant to moisture. In case of overload there is deflection warning instead of sudden breakage. Prices are higher than for wooden ladders.

Metal ladders should be examined for sharp edges and burrs on the side rails and for soft metal rivets that might shear off under load.

Metal ladders are conductors of electricity and should not be used around electrical equipment. Decals or painted warnings against such use should be carried on all such ladders.



Platform or safety ladder.

Single, extension and stepladders and planks, stages and hangers are available in light metals.

Types of Ladders

Single ladders, extension ladders, stepladders and platform ladders are to be found in most every industrial plant. Telescoping ladders and towers, which are actually small, portable scaffolds, are useful where much work must be carried on at high levels.

Step ladders are available in lengths up to 20 feet. Three types are listed by the Code:

- Type I—4 to 20 feet for heavy duty
- Type II—4 to 12 feet for medium duty
- Type III—3 to 8 feet for light duty

More substantial construction is, of course, specified for the longer, heavier duty ladders.

Step ladders should be constructed so that the front section will have level treads when in the open position.

For some operations the rung-back type of stepladder permits a helper to assist from the back of the ladder.

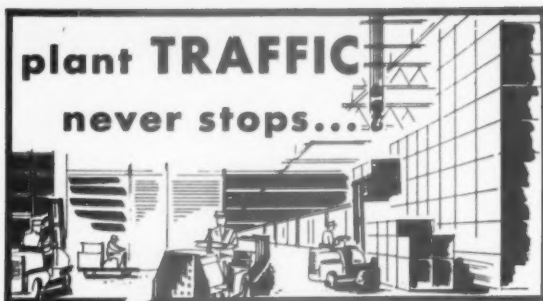
Each stepladder should be equipped with a spreader or locking device of sufficient size and strength to hold the front and back sections securely in the open position.

A bucket shelf is useful for many maintenance jobs. It should support a load of 25 pounds and be fastened so that it can be folded up when the ladder is closed.

Platform (safety) ladders are a development of the step ladder. They provide a solid working platform guarded on three sides. They are particularly useful on jobs at fixed heights where the work requires considerable freedom for the worker.

Safety ladders are usually built for heavier duty than the ordinary step ladder.

—To page 40



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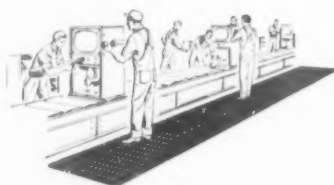
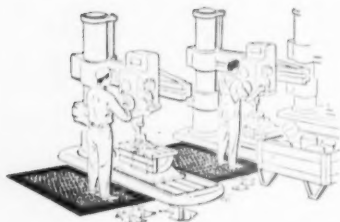
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Ladders

—From page 39

Height to platform ranges from 3 to 18 feet, over-all height being two feet more.

Single ladders up to the maximum length of 30 feet specified by the Code are available. For sizes larger than 24 feet extension ladders are preferred for convenience in storage and transportation.

Sectional size of side rails varies with the length of the ladder and diameter of rungs increases with the width of the ladder between side rails.

Diameter of rungs should be not less than 1½ inches. Holes for rungs may extend through the side rails or be bored to give at least 13/16 of bearing to the rung tenon.

Oilers' ladders should be provided with hooks at the top so the ladder may be securely fastened to overhead shafting.

Extension ladders. Two-section extension ladders up to 60 feet in length are recognized by the Code. Specifications for dimensions of side rails and type of wood permitted vary with the length of the ladder.

Minimum overlap for ladders up to and including 36 feet is 3 feet; from 37 to 48 feet, 4 feet; from 49 to 60 feet, 5 feet.

Smaller side rails on rung-type ladders are acceptable when reinforced by steel wire running the length of the side rails and securely fastened to them.

Locks must be positive in action. Guide irons must be securely attached to the ladder and so placed as to prevent the upper section from tipping or falling out while raising, lowering, or in use.

—To page 42



This platform ladder with casters on the back section can be moved easily and quickly. (Dayton Safety Ladder Co.)

Scaffolds and Staging

SCAFFOLDS and staging of various types are used in construction and maintenance work. The two terms are synonymous, the former being used in the construction industry and the latter principally in shipbuilding.

Accidents involving scaffolds are usually serious because they involve falls of men or materials from high levels. Principal causes include defective materials, improper construction, unsafe practices and physical disabilities of the individual.

Men who work at high levels should be carefully selected for the job.

Many of the accidents involving structural failure occur with scaffolds built on the job with sub-standard lumber and poor workmanship.

Types of Scaffolds

Many types of scaffolds are in use, including some designed for certain trades. The principal types are:

1. Tubular steel
2. Portable
3. Swinging
4. Suspended
5. Built-up wood

Tubular steel scaffolding is used on large construction jobs where it will be in use for considerable time and where work is carried on at great heights. This type of scaffolding may be purchased or rented. When rented, the contract usually includes erection and dismantling.

Steel scaffolds have low wind resistance and are non-combustible, except for the wood planks. Dismantling is less hazardous than tearing down wood scaffolding. Interchangeable parts facilitate erection and dismantling.

All steel members should be rust-proofed by cleaning and repainting after each job.

Tubular steel scaffolds for use inside buildings are frequently mounted on

casters. When casters are included, the base section should be made rigid by additional bracing to tie the bottoms of the upright tightly together. Caster locks should be provided to prevent movement while in use.

Portable scaffolds. Maintenance work in industrial plants and in public buildings is made quicker and safer by portable metal work stands and towers. They provide a broader platform than the platform ladder, permitting more than one man to work and providing more space for tools.

Some types of portable towers are telescoping while others have fixed heights. In addition to the models with four casters, there are work stands of the wheelbarrow type easily moved by one man.

Swinging scaffolds are useful for painting, tuck-pointing, window glazing and washing, and other operations where the scaffold height must be adjusted frequently as the work progresses.

A swinging scaffold should be securely hung from eaves, cornices, or other reliable support, with hooks of adequate strength. Anchorage should be carefully inspected before the hooks are placed.

Ropes should be of the best grade manila not less than $\frac{3}{4}$ inch, on at least six-inch blocks. Steel cable should be not less than $\frac{5}{16}$ inch. Steel cable is wound on a drum, not pulled by hand.

Suspended scaffolds are supported by outrigger I-beams attached to the frame of the building. They are recommended for use on buildings more than five stories high which have a frame to provide the overhead support. The scaffold is raised and lowered by steel cable operated by a winch.

The shackles or beam clamps holding the cables should be securely fastened to the outriggers with a stop bolt in the outer end of each outrigger. Cables should be securely fastened to the outriggers and to the put-logs which carry the platform or to the hoisting machines.

Built-up scaffolds. Wooden scaffolds are temporary structures and workmanship and materials are often sub-standard. Attempted economies frequently result in scaffold failures accompanied by serious injuries if not by fatalities.

Lumber for scaffolding should be inspected on delivery and stored where it will be protected from weather.

Specifying a particular grade of lumber may not be practicable since no one grade will be available in all localities. Names also have different meanings in different sections.

Spruce, fir, longleaf yellow pine, Oregon pine, or wood of equal strength should be used. Material should be straight grained, free from knots, checks, cracks, decay or other defects.



Tank car platform supported on a steel column bolted to a concrete base along track. From the grated deck, operator can turn platform 360 degrees, stopping at any angle over tank car. This platform makes it unnecessary for a man to work on the curved and slippery top of a tank car. (Nichols Engineering Co.)

Only the strongest species and grades should be used. In general, the heavier and denser woods are strongest.

Species and grades of lumber recommended for scaffold planks include:

1. Douglas Fir — select structural plank.
2. Southern Pine — merchantable structural longleaf plank and dense structural square edge and sound plank.
3. Larch — structural plank.
4. Norway Pine — select common.
5. Eastern Spruce — select common.
6. Tamarack — select structural plank.

The structural grades of lumber should be used for scaffold planking wherever possible. Where these are not available, each individual plank should be carefully inspected.

No planks of less than 2-inch nominal thickness ($1\frac{3}{4}$ inch dressed) or less than 8-inch nominal width ($7\frac{1}{2}$ inches dressed) should be used.

Railings and toeboards. Most codes require railings on scaffolds more than 12 feet high but railings are desirable on lower scaffolds. A top rail should be 36 to 42 inches above the floor with an intermediate rail half way between the top rail and the walkway surface.

Toeboards are needed to prevent tools or materials from falling.

Overhead protection, consisting of planking heavy enough to stop any falling object, should be provided for scaffolds when men are working overhead. This protection should be not more than 9 feet above the working platform.

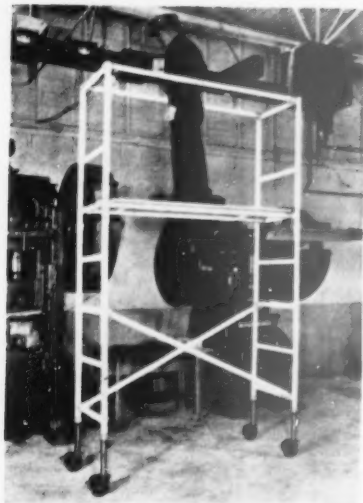
—To page 42



Swinging scaffold with ratchet or a pinion gear for raising and a worm and gear for lowering. (Patent Scaffolding Co.)

Scaffolds

—From page 41



Ladder scaffold used for many types of maintenance and electrical work. (Patent Scaffolding Co.)

Sidewalk bridges. Where construction or repair work is carried on over sidewalks, protection for pedestrian traffic is needed. Sidewalk bridges of adequate strength are provided by the companies furnishing sectional steel scaffolding.

Ladder-jack scaffolds are used chiefly by painters and electricians. They should not be used at a height of more than 22 feet above ground or floor. An unsupported span of more than 10 feet should not be used.

Ladders

—From page 40

Rope and pulley for raising and lowering, while not mandatory, are desirable.

Trestle ladders of the "A" type (with a center section which slides up and down) are used in maintenance work. These ladders are commonly used in pairs with a stage between them or in sets of four with two stages and with planks from stage to stage.

Points to be considered in selecting extension trestles are guides of adequate length, strong locks of the sliding section, and a safety spreader.

Telescoping ladders are mounted on rubber tired ball-bearing wheels with floor locks. Maximum height of working platform is 15 feet. When down, it will go through an ordinary door or into an elevator.

Telescoping towers reach still greater heights. These portable units can be extended up to 49 feet. The man on the platform controls the travel through an electric push-button system. Another push-button control is located on the frame below but the man above can

lock the platform in place by pressing a safety button. Outriggers give stability.

Chain and rope ladders are designed for emergency use as a means of escape in case of fire or explosion, and for rescue work where rigid ladders cannot be used. These are not a substitute for permanent fire escapes.

Crow's nest ladders. For many outdoor maintenance jobs the "crow's nest" ladder mounted on a truck is used. It is an extension platform ladder, securely mounted on the vehicle, which can be rotated in a complete circle and elevated at various angles from 45 to 72 degrees from the vertical.

This device permits working over parked vehicles and is used for such jobs as tree trimming, servicing street lights, police and fire alarm signals, inspecting overhead lines, connecting house services, and general emergency work. It can be lowered into compact form for traveling.

Accessories

Ladder shoes. Whenever a portable ladder is used on anything but dry ground, there is always danger of the feet slipping. To overcome this hazard, several types of ladder shoes have been devised. In general, they grip the surface either by sharp points or by friction.

One type of sharp point is the metal spike; another is the abrasive shoe. The friction type includes those shoes which depend upon frictional resistance for the gripping qualities, such as cork, lead, and rubber or neoprene with interwoven cord.

Another type made of cotton asbestos material and interwoven wire com-

bines the two principles. Suction cups are used in still another type.

Ladder shoes become less effective through wear, especially when exposed to oil and grease on the floor. Consequently, they should be inspected regularly.

Stabilizers. When a ladder is used on an uneven surface hydraulic stabilizers attached to the feet keep a ladder firm and steady. These can be attached to any straight or extension ladder.

Maintenance

Inspection. Among things to look for are: Loose rungs or steps; screws, bolts and other metal parts broken or missing; cracked, or broken uprights, braces, steps or rungs; slivers; worn or damaged shoes.

All ladders found defective should be marked and taken out of service until defects have been corrected. If beyond repair they should be destroyed promptly.

Records of the condition of all ladders should be kept.

Storage. Ladders should not be stored where they will be exposed to weather, nor near radiators, stoves or steam pipes.

Protective Coatings

Two coats of linseed oil or spar varnish will increase resistance to weathering.

Painting is now permitted by the ASA Code, if the ladders are inspected before painting by experienced inspectors acting for the purchaser and the ladders are not for resale. Transparent coatings, however, are still preferred by many users.

Wood preservatives, which consist of toxic chemicals in non-aqueous solution, prolongs the life of wood exposed to weather or in contact with the ground. They offer special protection at the joints or rung holes and tenons. Preservatives of the NSP type (non-swelling, paintable) do not interfere with subsequent painting and varnishing.

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SAFETY INSPECTION

(Check List of Mechanical Items)

THIS comprehensive check list may be broken up and parts of it assigned to individual group or department inspectors by underlining certain classes of the items:

1. Machines and equipment, belts, oiling devices, tools and appliances.
2. Guards and safety devices.
3. Ropes, tackle, chains, all hoisting equipment.
4. Conveyors, trucks, overhead cranes, track cars, motor vehicles, wheelbarrows, elevators, switching tracks and equipment.
5. Electric motors, switches, wiring, all accessory equipment.
6. Ventilation; dust protective equipment, fans, exhaust systems.
7. Acids, caustics, chemicals, gases; their storing and methods of supplying by means of containers, pipes, valves and other equipment; explosive materials; cutting oils and compounds.
8. Heating and power equipment, boilers, engines, power line shafts, and all accessories; fuel storing and firing equipment.
9. Materials in storage; piled materials; safe floor loads.
10. Fire hazards; fire fighting equipment.
11. Lighting—natural and artificial.
12. Housekeeping.
13. Protective clothing; emergency and other personal protective equipment.
14. Sanitation and hygiene.



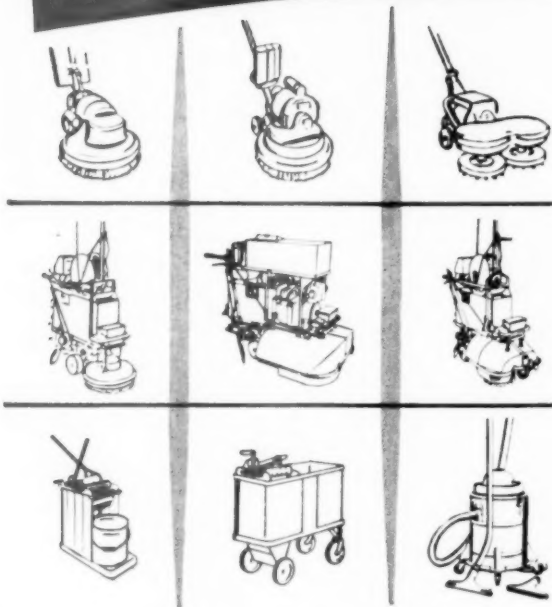
SAFETY INSTRUCTION CARD No. 333

Keep your floor-maintenance men happy...



with *Job-Fitted* EQUIPMENT!

Choose from the **COMPLETE** *Finnell Line*
More than a score of models and sizes
permits selection of the equipment
that's exactly right for your job!



However much a maintenance man may want to do a good job, and at the same time show savings in labor costs, he's stymied if the machine is too small, or too large, or is otherwise unsuited to the job. Different floors and areas call for different care and equipment. That's why Finnell makes more than a score of floor-maintenance machines. From this complete line, it is possible to choose equipment that is correct in size as well as model... that provides the maximum brush coverage consistent with the area and arrangement of the floors.

Finnell makes Conventional Polishing-Scrubbing Machines in both concentrated and divided-weight types, each in a full range of sizes... a Dry-Scrubber, with self-sharpening brushes, for cleaning grease-caked floors... Combination Scrubber-Vac Machines for small, vast, and intermediate operations, including gasoline as well as electric models... Mop Trucks... Vacuum Cleaners for wet and dry pick-up, including a model with By-Pass Motor. In addition, Finnell makes a full line of fast-acting Cleaners for machine-scrubbing... Sealers and Waxes of every requisite type... Steel-Wool Pads, and other accessories — everything for floor care!

In keeping with the Finnell policy of rendering an individualized service, Finnell maintains a nation-wide staff of floor specialists and engineers. There's a Finnell man near you to help solve your particular floor-maintenance problems... to train your operators in the proper use of Finnell Job-Fitted Equipment and Supplies... and to make periodic check-ups. For consultation, demonstration, or literature, phone or write nearest Finnell Branch or Finnell System, Inc., 2203 East St., Elkhart, Ind. Branch Offices in all principal cities of the United States and Canada.

FINNELL SYSTEM, INC.

Originators of Power Scrubbing and Polishing Machines

50th
Everything
FINNELL
for Floor Care
Anniversary

BRANCHES
IN ALL
PRINCIPAL
CITIES

Disaster Control

—From page 36

4. Repair damaged water mains and utility lines.
5. Fight fires.
6. Maintain morale.
7. Prevent panic.
8. Maintain order and discipline.
9. Demolish unsafe structures.
10. Remove debris.
11. Perform necessary welfare duties.
12. Effect emergency restoration of plant so production may be resumed.

The head of each protective service in the plant is responsible for training workers in his organization. In planning a training schedule he should co-operate with municipal departments and with the local civil defense organization.

Because of the devastating effects of an atomic attack, it is advisable for an individual trained in one service to receive training in other services as well. A rescue worker, for example, might be able to put training in fire fighting to good use.

Teams of each protective service should be trained with teams of other services to assure coordination of activities. Training should be as realistic as possible. It should reproduce conditions likely to arise before, during and after an emergency.

The protective services should also engage in combined training exercises

with the local civil defense organization. The plant's protection organization must be well integrated with that of the surrounding area to function at peak efficiency in an emergency.

The purpose of the program is to save lives and property and keep the wheels of production turning. There will be no running for the hills if bombs should start falling. People will take shelter where they work, and when the attack is over, they will come out, do whatever rescue work and fire fighting is necessary, clean up the mess and go back to work producing for victory.

Compressed Gases

(From a talk by W. W. Allison, Westinghouse Electric Corp.)

Oxygen is usually prepared by liquefying air, by increased pressure and reduced temperature. Then by fractional distillation, the nitrogen, carbon dioxide and oxygen in the air are separated. It is then furnished to us in 220 cu. ft. steel cylinders under about 2000 lbs. pressure at 70° F. While pure oxygen will not burn or explode by itself—it will cause any grease or oil in a gauge, gauge line or pipe line to explode. There is only 20 to 21 per cent oxygen in air. Yet you must have oxygen to burn most anything from paper to hydrogen. So you can readily

appreciate that 100 per cent oxygen escaping from a 2000 lb. pressure cylinder will increase the fire hazard.

Any compressed gas cylinder can become literally a self propelled jet rocket tearing through brick walls if the cylinder is hit or broken off. That is why we are so strict about tightly securing any and all compressed gas cylinders.

Acetylene is generated usually by feeding regulated amounts of calcium carbide into water in a generator. It should never be generated inside a building nor should it be generated, distributed or used in pressures greater than 15 p.s.i., because at greater pressures it may become unstable and explode.

Acetylene C_2H_2 is about 92 per cent C and 7.7 H and because it is one of the few endothermic substances, that is, it contains stored up energy released as heat when it burns beyond the normal heat of combustion, it can produce a 6000° F. flame when used with O_2 . Open the valves only $1\frac{1}{2}$ turns.

Calcium carbide in large amounts is very dangerous if not kept dry and handled like gunpowder.

Acetylene cylinders contain 300 cu. ft. of acetylene dissolved in acetone. However, acetylene cylinders are filled with a porous material which is necessary for safe and stable storage of the dissolved acetylene.

All compressed gas cylinders must be secured either in transit or in place, regardless of the apparent carelessness you may have seen others use in handling cylinders.

You should make sure the cylinder bears the ICC stamp and a date no older than 5 years, and that it is not leaking.

Most compressed gas cylinders have fusible safety plugs in the valve. Many of these including acetylene safety plugs melt at about the boiling point of water. So if the valves become clogged with snow and ice, they should be thawed with a small amount of warm (not boiling) water applied only to the valve. Never use a flame to thaw the valve.

Acetylene and all liquefied fuel gas cylinders should be stored and used with the valve end up so the gas and not the liquid comes out of the valve. Acetylene cylinder valves must not be opened more than $1\frac{1}{2}$ turns.

Direct flames, sparks, molten metal, excessive heat or electric arcs should never be allowed to contact a compressed gas cylinder.

Flammable gases should be protected from long exposures to hot sun in the summer. Ordinarily our summer days in this locality are not hot enough to cause any danger outdoors.

Make sure the threads on a regulator correspond with those on the cylinder valve. Do not force connections that do not fit. Be sure you use the correct regulator. Use regulators and pressure gauges only with gases for which they are designed and intended.

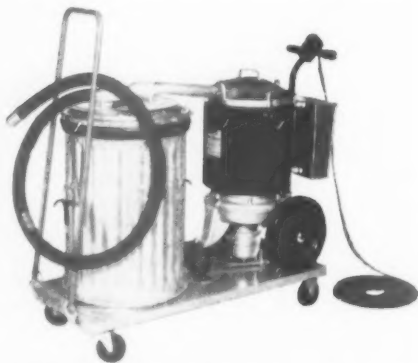
Never attempt to repair or alter cylinders, valves, regulators or attachments. This work must be done by the manufacturer.

KENT

presents a sturdy truck to carry the KENT
SUCTION CLEANER and extra dirt receptacle!

Large Capacity for DIRT and LIQUIDS!

KENT Suction Cleaner and 27-gallon tank for extra capacity are installed on truck in a jiffy—and as easily removed—without tools of any kind! Automatic shut-off valve in cleaner operates when BOTH tanks are full of liquid . . . no water can enter fans or motor. Tension spring holds adjustable handle in position shown when not in use.



THE KENT SUCTION CLEANER for wet and dry pick-up is quickly available for separate use when less dirt or liquid capacity is required . . . and suction unit can be used as a blower! The priceless ingredient of quality is built in every KENT Machine—including the famous KENT Floor Machines. All are built to last!

FULL INFORMATION UPON REQUEST



CLEAN WITH **KENT** EQUIPMENT

THE KENT CO., INC., 415 CANAL STREET, ROME, NEW YORK

Test all connections and valves with soapy water before using.

Open cylinder valves slowly.

If there is no valve wheel, the approved wrench or key must be on the valve while the cylinder is in use.

A regulator valve to reduce pressure must always be used.

Before connecting a regulator, crack the cylinder valve slightly to clean the opening of dirt or dust. Be sure to stand aside. But *never* "crack" hydrogen valves as the chance of ignition is too great.

After the regulator is attached—stand aside and open the valve slowly, as a sudden surge of pressure may damage or blow out the gauge.

Keep oxygen, cylinders, gauges and fittings away from oil and grease and do not handle them with oily hands, gloves or clothing—unless you want to become a human torch.

Never use oxygen as a substitute for compressed air—in breathing apparatus, compressed air hammers or other tools, in burners or engines. In shipbuilding many welders were burned to death when they used compressed oxygen for ventilation in a hold instead of compressed air which they had used previously.

Never fill cylinders or attempt to mix gases in a compressed gas cylinder or use it for any purpose other than those for which it was intended.

Manifolds should be designed and obtained from a listed manufacturer and installed under their supervision.

Only recognized standard regulators, such as Linde and Airco, are approved for use.

Regulators are instruments and like any instrument, they require care in use and handling and are worthless if they are not working right.

If a regulator creeps or builds up pressure on the low pressure gauge when the torch is closed, the cylinder valve should be closed and the regulator removed for repairs. If the gauge is not registering pressure properly it should be removed.

All repairs must be done by the manufacturer. Tag the regulator and return it to the Research Storeroom. Of course, you can immediately draw out a new or newly repaired gauge for use.

Hose

Hoses for different gases should be different colors with couplings stamped for identification to prevent interchange of connections.

Usually your welding and cutting hose connections are marked STD-OXY for the green oxygen and STD-ACET for acetylene red hose.

Care must be taken to prevent sparks or slag or flame from hitting hose—and protect hose from being kinked or run over or caught in a door.

If a flashback occurs and burns in the hose, even briefly, cut off and discard burned hose. Cut off leaking sections of hose; never repair hose by taping.

Test for leaks by placing hose under water under normal working pressure or turn off torch under normal pressure and watch low pressure gauge at least two minutes for drop in pressure.

A single hose with more than one gas passage must not be used as wall failure would allow the gases to mix in the hoses.

Explosive Limits

Acetylene creates an explosive mixture when from 2.5 to 80 per cent of acetylene is in air. Or its explosive limits are from 2.5 to 80 per cent by volume in air.

Hydrogen 4 to 84 per cent.

Acetone 2.5 to 12.8 per cent with a flash point of 0° F.

Alcohol has a flash point of 48° F. and is much less volatile than acetone and much safer to use. But remember methyl is lethal.

Ether F. P.—49° F. 1.85 to 36 per cent explosive limit.

Gasoline F. P.—50° F. but very short range of 1 to 6 per cent explosive limit.

He Found the Leak

Employee had put a set of full chlorine cylinders on the chlorine manifold, according to the report. One cylinder was turned on to check for leaks. He found a leak—fast! Before he could get out of the leak area he had a pair of irritated lungs.

A gas mask suitable for protection against chlorine would have prevented this.



*** YOU'RE 9 nickels AHEAD**

on every dollar
you spend for maintenance
when you specify
labor-saving floor treatments
by *Hillyard*

Figure it out for yourself:

ORDINARY CLEANING \$
9¢-materials
91¢-labor
\$100

You know it's right if it comes in a Checkerboard Drum

HILLYARD CLEANING \$
10¢-materials
45¢-labor
55¢ <i>(Save half the labor costs)</i>



This small sample of visual arithmetic is just to remind you of three things:

First—the major operating expense in any building is maintenance

Second—90% of the money spent on maintenance goes for labor (only 10% for materials)

Third—Hillyard floor treatment products can save you up to HALF of this labor cost...

Because they're specialized to go on easily—last longer—need less daily care.

...on your staff not your payroll

WRITE FOR FULL INFORMATION

Hillyard Chemical Company, St. Joseph, Missouri

Please have the Hillyard Maintainer in my vicinity call—make a complete floor survey—free of charge.

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INDUSTRIAL HEALTH



Abstracts of current literature
on Industrial Hygiene, Medicine, and Nursing

BY F. A. VAN ATTA
Industrial Department, NSC

Radioactive Waste

Efficiency of Filter Beds for Treating Radioactive Waste, by Lee Gemmell. *Nucleonics* Volume 10, No. 10, pages 40 through 42, October, 1952.

The possible utility of conventional sewage treatment plants for taking care of the relatively small amounts of radioactive wastes resulting from the use of small amounts of isotopes is of considerable interest. The disposal plant at the Brookhaven National Laboratory was used as an experimental setup to determine the possibilities of such a plant.

The plant consists of an Imhoff tank and a system of six intermittent sand filters of about one acre each. The flow is about 223,000 gallons per day. The liquid after leaving the Imhoff tank is sampled and the volume is measured by a recording meter and it is then sent to a 25,000-gallon dosing tank which automatically dumps it onto one of the filter beds when the tank is full.

Each sand filter is six feet deep with sand and gravel with a tile underdrain system which carries the filtered liquid to a stilling tank where it is again sampled and measured and chlorinated before discharged into the small stream running into the Peconic River.

As a first test, one of the filter beds was dosed with a known quantity of a specific isotope which was applied during the dumping of a single 25,000-gallon dosing tank while all other radioactive wastes were kept out of the sewage system.

The radioisotopes used in dosing the bed were phosphorus 32 as phosphoric acid, iodine 131 as an iodide, strontium 90 as acid chloride and a six months' old mixed fission products sample.

After the radioisotopes were applied samples were taken at the tile underdrain system in addition to the proportional samples of the day's operation. These tests showed that the phosphorus 32 was 92 per cent removed, iodine 131, 88 per cent, mixed fission products 98 per cent and strontium 90, 99 per cent removed by passage through the filter bed. The phosphorus 32 was peculiar in that the concentration coming through the sand reached its highest value 24 hours after the isotope was applied to the bed and the concentration then decreased slowly for the next five days. The other isotopes showed

their maximum concentration coming through almost immediately after they were applied to the bed and the concentration fell off to the background level within three days.

In order to determine somewhat more accurately what was happening in the filter bed, test holes were dug in the bed and the bed was divided into three sections. The top three inches of the filter sand was much darker than the rest of the sand and undoubtedly contained most of the organic and inorganic materials precipitated from the sewage. This was taken as the first section. The next nine inches which also showed some darkening was taken as a second region and the remaining five feet as the third region.

These three areas of the bed were separated and individual laboratory columns were made for each layer. Dosing these laboratory columns with the same materials showed that approximately 90 per cent of the total activity absorbed on the column was retained in the first three inches, approximately 8 per cent in the next 9 inches and about 2 per cent in the rest of the filter bed.

In order to test the probability that the filter beds would become saturated with use, a number of laboratory columns were set up duplicating as closely as possible the actual composition of the filter bed and these were dosed with sewage containing relatively large amounts of radioactive isotopes. These columns 5.6 centimeters in diameter received 2 millicuries of phosphorus 32 and iodine 131 and 6 millicuries of the mixed fission products. The removal efficiency of the columns never fell below 50 per cent and showed fluctuations from day to day so that probably they were not saturated at the end of the experiment. A loading of 2 millicuries on one of these columns would correspond to about 3,200 curies for each of the filter beds of approximately one-acre area.

Arc Welding Gases

Gases Produced by Inert Arc Welding, by John J. Ferry and Gordon B. Ginther. *The American Industrial Hygiene Association Quarterly* 13:196-198 (December 1952).

An investigation has been made of the gases and vapors which may be produced by the inert arc welding

process. The subjects of concern were the production of ozone and oxides of nitrogen in ordinary welding in the air and the effects on trichloroethylene vapor when it was present in the atmosphere. The latter was of special interest because of many complaints when material which has been degreased with trichloroethylene is welded.

The welding was done at 55 amperes and 110 amperes with 0.04 inch and 3/32nds inch electrodes. Both argon and helium were used at the inert atmosphere. The normal gas flow was 15 cubic feet per hour with either gas but in some experiments this flow rate was doubled. All of the experimental work was done in the welding laboratory because of the difficulty of taking long-time samples in the shop.

To provide a trichloroethylene atmosphere a cardboard box containing trichloroethylene in an evaporating dish was set down about 12 inches from the arc with the open side facing the arc. By varying the number of paper wicks in the evaporating dish and the rate of air flow the trichloroethylene concentration in the atmosphere could be fairly well controlled.

Both ozone and nitrogen oxide were produced in considerably larger concentration when the arc was surrounded by argon than when it was surrounded by helium. The concentration of these gases was also increased by doubling the rate of inert gas flow.

The concentration of oxides of nitrogen was far below the permissible maximum and the highest concentration of ozone obtained was six-tenths part per million which is still below the one part per million usually accepted as a permissible maximum.

The surprising thing was the extremely high concentration of phosgene which was produced when there was trichloroethylene in the atmosphere. The reaction appeared to be photochemical because the phosgene was produced instantly throughout the area when the arc was struck and also because the production was stopped when the trichloroethylene was shielded from the arc by a glass funnel.

A strong disagreeable odor was produced at the same time as the phosgene when trichloroethylene was present in the atmosphere.

A Basis for Judging Safety Contests

MANY standards have been set up for judging the safety performance of a plant or department in a safety contest. While low accident records are the objectives of a contest, it is felt that some recognition should be given for effort and to minimize the element of luck.

In the annual contest conducted among plants of Pullman-Standard Car and Manufacturing Company, three factors have been established:

- (1). Frequency and severity of accidents—50 per cent
- (2). Plant housekeeping—25 per cent
- (3). Plant safety attitude and effort—25 per cent.

Details follow:

1. Frequency and Severity of Accidents. The frequency rate is defined as the number of lost time injuries per 1,000,000 hours worked. The severity rate is the number of days lost per 1,000 hours worked.

In the past, in determining a contest winner, one of the factors considered was the improvement of the current frequency rate over a past record. This score, standing alone, tended to penalize good safety performance because, the better the record, the more difficult it was to improve that record. Where the statistical record has not shown any improvement, because the score was already high, adequate consideration will be given any plant showing a consistently good over-all safety record.

2. Plant Housekeeping (Each factor to be rated excellent, good, fair or poor.)

Buildings—Lighting Maintenance, Wall and Window Maintenance, Hallways and Stairways, Corners and Columns, Wiring Maintenance and Floor Surfaces.

Aisles—Free from Obstruction, Free Passage to Work Positions, Free Passage to Stretchers, Switches, Fire Equipment and Fountains, Aisle Marking.

Machinery—Condition of Guards, Condition of Electrical Equipment and Wiring, General Appearance; Clean-Oily-Dirty.

Material—Proper and Safe Piling and Storage, Disposal of Scrap Material, Proper Staking and Binding.

General—Outside Grounds, Company Signs, Outside Fence and Gates, Bulletin Boards.

3. Plant Safety Attitude and Effort

A. What is the general safety feeling in plant?

B. Are safety meetings held regularly? Are they scheduled meetings? Are minutes kept and distributed?

C. Are departmental safety recommendations handled promptly?

D. How are safety inspection items handled?

E. Is goggle wearing observed?

F. Do the men wear safety shoes?

G. Are safety posters used?

H. Does the Accident Investigating Committee meet promptly to check on lost time accidents?

I. How is the follow-through on recommendations submitted by the Accident Investigating Committee?

J. Are safety suggestions made?

K. Do you occasionally have a health and off-the-job accident program?

What'll It Cost?

SURE, we'll buy a little of that safety stuff—if it doesn't cost too much!

You know, I heard it would have cost the boss about 200 bucks to replace that floor in the finishing room . . . sure, that ain't hay. . . .

I wonder what the insurance company paid Sam when he was off two weeks after that truck of castings tipped over on him when it hit that bad spot in the floor? Did you know, they couldn't get a man to replace Sam, and Ed and Bill got in a lot of overtime keeping up with Sam's stuff. . . . Yeh, I also heard a truck of those precision parts tipped over at the other end of the department and about half of them were damaged. . . .

Felton was telling me those gate guards cost about 75 bucks complete. . . . Naw, the boss wouldn't shell out that kind of dough for those things. . . .

By the way, whatever happened to Mike since he had those four fingers mashed? You know, it took about a month to get a replacement for him and this new guy puts out only about half the production Mike did.

Ersel said he turned in a suggestion to use that scrap tubing we throw out to make some storage racks to get that bar stock off the floor and out of the aisle. Well, after he had waited a couple of months without hearing, he asked the boss what about it. . . . Naw, the boss said it would cost more than it would be worth. . . .

Did you ever see that area about 11 A.M.? Can't even get through it for all the congestion. They just bring those parts up and let 'em sit. It takes about an hour to find anything you want. All that air space going to waste when the floor area is so clogged up. . . .

Safety? Sure, the boss'll buy a little of that stuff—if it doesn't cost too much!

ROBERT D. GIDEL, Senior Engineer
Industrial Department, National Safety Council

PAINTING



CLEANING



ELECTRICAL WORK



INSPECTION



REPAIRS



Save 5 Ways Safely...

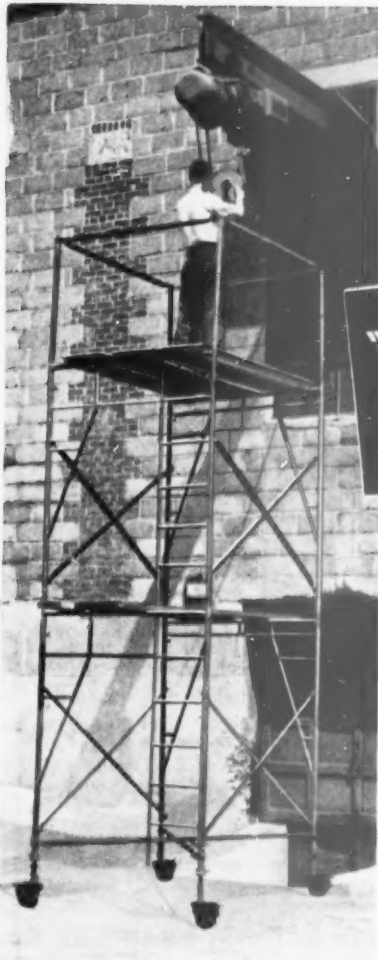
on Maintenance Work with

"TROUBLE SAVER" SECTIONAL STEEL SCAFFOLDING

Simplify plant maintenance. "Trouble Saver" Steel Scaffolds assure greater economy and safety.

- Scaffolding erecting and dismantling time is sharply reduced.
- Men do more and better work on firm, safe scaffolding.
- You protect workers against costly accidents.
- Less labor is required for any job.
- Convenient, efficient scaffolding cuts material waste.

"Trouble Saver" Scaffolding is available in types and sizes for every maintenance need — indoors or outside. Write for Bulletin PSS-24 and Catalog M.



"TROUBLE SAVER" Rolling Scaffolds

Left: A typical "Trouble Saver" industrial rolling scaffold, equipped with casters, used for repairs and painting.

Right: "Trouble Saver" LADDER SCAFFOLDING — can be quickly put together from ladder units, 3', 5', 6'-6" or 10' high. Extension bases, 3', 4' or 5' wide are used for working at greater heights.



"TROUBLE SAVER" Adjustable STEEL TRESTLES



- SAFE
- STRONG
- ECONOMICAL



Details of the quickly adjustable "Trouble Saver" Steel Trestles.

The Steel Scaffolding Company, Inc.

856 Humboldt Street

Dept. NSN

Brooklyn 22, New York

Telephone: EVERgreen 3-5510

National Safety News, March, 1953

Whatever Your **"OFF-THE-GROUND JOB"**
when it comes to **SCAFFOLDS** and **LADDERS**

.....come to

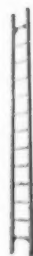
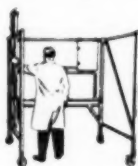
P.S.

PATENT SCAFFOLDING CO.

GOLD MEDAL LADDERS



Folding Aluminum Rolling Scaffold . . . "packaged" unit easily carried and quickly erected. Folds compact for storage. Base area: 4½' x 6'. Section heights: Base 7'; intermediate, 6'; half, 42"; guard rail, 42". UL approved.



SINGLE LADDERS
8' to 24'.

SAFETY PLATFORM LADDERS

Platform heights 3' to 18'.
Also Sectional, Special-purpose Ladders and Magnesium Ladders.



EXTENSION LADDERS
16' to 32'.

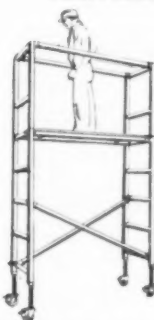
STEP LADDERS
All styles to 20'.



ROLLING SCAFFOLDS



LADDER SCAFFOLDS



Put men at correct height for efficient work. Sturdy and safe, yet lightweight. Separate components slip together easily; disassemble quickly for space-saving storage. Interchangeable with FOLD-A-WAY Scaffold. UL approved.

TUBE LOX® Scaffolding



Coupler-Type Equipment, in steel or aluminum. Used indoors or outdoors, ideal for contoured surfaces and difficult conditions.

GOLD MEDAL JUNIOR SAFETY SWINGING SCAFFOLD

Designed for many light duty operations. GOLD MEDAL Junior Scaffolds eliminate the dangers of rope tackle. 100', 150' and 200' steel cables give extra safety. Machines are triple locked at all times to prevent slipping. UL approved. Midget Safety Scaffold also available—75' cable.



"GOLD MEDAL" JUNIOR Safety Swinging Scaffolds



Positive locking raising and lowering mechanism. Steel reinforced platforms in lengths of 16 to 22 ft. with 100, 150 or 200 ft. of steel wire rope. Approved by U.L.

"GOLD MEDAL" MIDGET

Swinging Scaffolds are ideal for lighter duty work. Machines lock 3 ways for maximum safety. Platforms in 12 to 20 foot lengths supported by 75' of steel wire rope.

FREE GUIDE TO THE SELECTION OF THE PROPER LADDERS AND SCAFFOLDS FOR PLANT MAINTENANCE. WRITE FOR BULLETIN G-205.



for Greater Safety . . . Efficiency . . . Economy

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It's engineered into
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maintenance towers



Only Master Welders work on SAFWAY Equipment
Interchangeable parts constructed by safe, strong, life-time welding of high carbon tubing.



All SAFWAY Equipment Treated with Rust Inhibitor
Maintains accurate fit of parts and fasteners to assure safe, rigid maintenance towers.



Enamel is Baked on All Surfaces, Inside and Out
Improves appearance of equipment—helps insure lasting fit of parts and long life.



All SAFWAY Equipment is Engineered to Last
With only routine care, Safway equipment will deliver a life-time of safe, efficient service.

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STEEL PRODUCTS, Inc.
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Tubular Steel Scaffolding and Equipment

Controlled Smoking

Smoking, if not overdone, undoubtedly contributes something to morale. The effect on production is not easy to evaluate. Some managements hold that any absence from plant machinery, other than necessary short absences, is objectionable. Others see little economic harm if the absence is confined to brief periods during which processing equipment is maintained in normal operation.

The relation of smoking to the fire hazard is vitally important. Where no smoking is permitted, the fire hazard is minimized. Where there is failure to empty pipes, or careless disposal of cigarettes, cigars, and matches before entering operating departments, the hazard, of course, is much greater. Smoldering pipes in pockets present a greater danger than cigarettes. Smoking in production departments, particularly where flammables or combustibles are exposed, should not be tolerated.

Adequate supervision of smoking areas is recognized as essential to satisfactory operation, whether indoors or outside, and whether in continuous or intermittent use. The degree of such supervision varies greatly according to local conditions. In many instances, employee cooperation is excellent and little supervision is needed.

Continuous supervision is usually necessary in zones marked off in building areas or yards. Physical segregation from manufacturing departments is widely favored and the trend is toward small smoking rooms conveniently located for the majority of employees.

Fire Protection for Windowless Plants

When exterior windows of a plant are bricked up for installation of air conditioning, new problems in fire fighting may be introduced. These are more complicated in multi-story buildings with combustible floors and roofs.

Lack of access and delay in effective use of hose streams from outdoor hydrants may hamper extinguishment when there are no windows. Another difficulty is lack of ready means of smoke ventilation.

Automatic sprinklers would extinguish an ordinary fire as in any other building. But, if the fire is shielded, or if sprinklers happen to be shut off, serious consequences are likely.

Continuing liberation of heat and smoke make it difficult to locate and attack a fire. This would be further complicated if the lighting system were put out of service. If the fire reaches the stage where the building cannot be entered, and if the building has combustible floors and roof, destruction is almost certain.

Air-conditioning equipment should be arranged so that it can be used for smoke ventilation in case of fire. This is contrary to recommended practice for buildings of usual construction, where air-conditioning fans are shut down immediately at the start of a fire,



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Can't
Fall

It is
a Life
Saver**

IT LOCKS — IT HOLDS

SAFETY DEVICE FOR LADDERS

Prevents Injuries by Falling

EASILY TO INSTALL

Fastens to Rung, Peg, Pole or Frame

SIMPLE TO OPERATE

Men Can Climb—No Instruction

SAFETY SPECIFICATIONS

High Safety Factor—
Will Not Rust or Corrode

Write for Folder

Safety Tower Ladder Co.

P.O. BOX 1052

BURBANK, CAL.

STOP THAT FALL



SAFETY LIFELINE LOCK for SCAFFOLDS and SWINGS

Locks automatically and instantly.

Slips on ordinary rope lifeline at ground. Moveable up or down with man. In instant locking position at all times whether stationary or being moved up or down.

Snap into safety belt, no adjusting.

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strong • sturdy • light weight

above all Dayton Ladders are

safer



Dayton Safety Ladders make all off-the-ground jobs SAFER . . . give workman complete confidence . . . he can work with both hands from the roomy, rail-guarded platform. Automatic locking feature assures safety while ladder is in use. Easy to carry. Folds compactly.

Dayton Safety Ladders are constructed of tested airplane spruce, reinforced with rigid steel supports for great strength and lightness of weight. Sizes: 3 ft. to 16 ft. (ground-to-platform height) with standard rubber safety shoes at no extra cost.

Dayton Safety Ladder Shoes

. . . make your present straight ladders SAFER ladders . . . help prevent slipping. Specially designed suction rubber tread has intense gripping power. Shoes instantly converted for either indoor or outdoor use.

Base: 16-gauge steel. Side plates: 13-gauge steel. Treads are renewable. Lock nuts and spring washers assure proper adjustment.

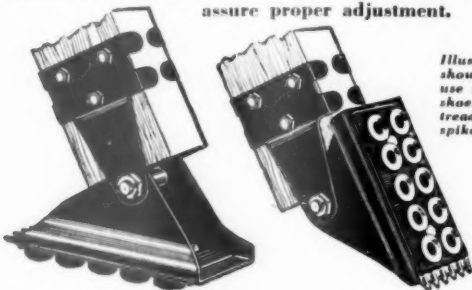


Illustration shows double use of ladder shoe. Rubber tread or spiked toe.

Dayton "Roll-Along" Ladders

1. Rubber tired swivel casters provide easy, effortless movement into any direction.
2. Safety shoes with renewable treads hold ladder safely stationary while ladder is in use.
3. Constructed of tested airplane spruce throughout, reinforced with steel braces for added safety.
4. Platform folds into extra step when extra height is required.
5. Folds compactly for convenient storage.
6. Three sizes: 3 ft.—4½ ft.—6 ft.



Write Dept. D
for Bulletin

Dayton

safety ladders

Dayton
safety ladder co.

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In Canada—
SAFETY SUPPLY CO., TORONTO

SAFER • FLEXIBLE



#501: Folding Sawhorse.

Adjustable for height. Sturdy all-metal construction, except top timber.

#502: Hinge Bracket Leg Assembly.

Well adapted for use as folding table and bench legs.

#503: Hinge Bracket Only.

For those wishing to furnish legs and top timber, for specific need.

Safer: metal construction for strength. Ease of handling. Rubber tips prevent slippage. All fireproof except top timber.

KEEP YOUR LADDERS "ON THE LEVEL"

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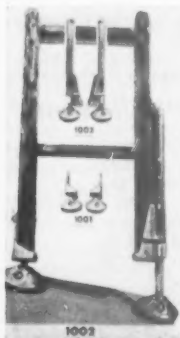
Non-adjustable

#1032:

One adjustable;
one not

#1003:

Both sides
adjustable



with JONNY-FOOT LADDER
SAFETY SHOES and
STABILIZERS

"The 5-Star Safety Shoe"

- ★ Ball and Socket Foot permits 100% efficiency performance, with 19 sq. in. of gripping surface.
- ★ Practically indestructible
- ★ Lowest cost for life of equipment
- ★ Easily installed in minutes
- ★ Three models:

Write for full information

JON-NE-FUT Mfg. Co., Inc.
Box 226 • South Gate, Calif.

and the area is vented by opening doors and windows.

To ventilate by the air-conditioning system, it is necessary to provide: (a) louvers in outside walls which will open at very low positive pressures; (b) fire dampers in return duct systems arranged for automatic closing by thermostats or photo-electric cells in case of fire. With such an arrangement and fans running, smoke will be forced out through the louvers.

Additional exits for personnel and means of access for firemen and hose streams may be necessary. Ample standpipes for 2½-inch hose in stair wells or just inside fire escape access doors, and water-flow alarms on all sprinkler risers should be provided.

Fire brigades should be well drilled and should know what to expect in fighting fires in windowless, air-conditioned areas. Their equipment should include smoke masks and portable lights.

Maintenance Work

Maintenance crews need even more thorough training in accident prevention than the regular workers. Maintenance work involves a complex and constantly changing set of conditions rather than a set pattern of activity.

In addition to the regular tools, the maintenance man is concerned with ladders, gloves, masks, goggles, safety shoes, protective hats, safety belts, respirators, rope, chains and other items of equipment.

The training program should include first aid and life-saving techniques. In industries where irritating, toxic or corrosive dusts, gases, vapors and fluids are present, training should include the characteristics of these substances and methods of controlling their hazards.

The men must be trained to inspect rope, chains and hoists and to discard items that show excessive wear.

At the start of any job not of a routine nature, the crew should be called together to discuss the problems involved and methods of doing the work safely. If the job is especially complicated or hazardous, the safety director may be called on to assist in the planning.

Scale models may be constructed to determine clearances, methods of moving, and sequences of action.

Tools and tackle should be inspected for wear and defects before use. When special tools can be designed to make a job safer, the engineering department should be consulted for design and specifications.

New Sound Film on Lightning Protection

"Lightning Masters," a new 30-minute full-color sound film, has been announced by the General Electric Company's Distribution Transformer Department at Pittsfield, Mass. This new film release depicts the phenomena of natural lightning and tells a story of lightning research and the development of modern protective equipment.

The film cites the important advances made over the past three decades, during which lightning has been resolved from a mysterious force of nature to quantitative engineering facts.

Through a series of simple animated drawings, the movie portrays how lightning is generated by nature; how a lightning bolt strikes; how a lightning arrester works to protect power lines and equipment from damage. In blueprint style the film shows what happens on an open- and grounded-end line to insulation and to equipment when lightning releases high voltage traveling waves on a power line.

The protective performance of modern lightning arresters is demonstrated in scenes taken at General Electric's High Voltage Engineering Laboratory where giant lightning generators can discharge as much as 15,000,000 volts.

The film shows experiments with high voltage sixty cycle power, using both single and three phase facilities. Such tests, the film explains, have been instrumental in developing better insulations and more efficient designs for power apparatus.

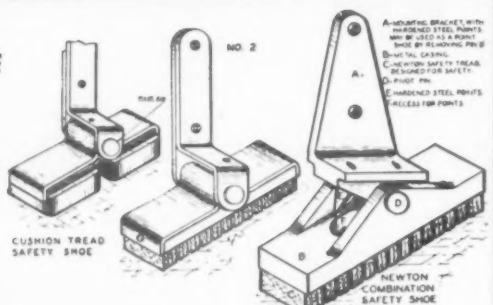
The film illustrates the various types of lightning protective equipment that are used to protect each segment of a power system from the generating station to the watt-hour meter.

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LADDER SHOES
PREVENT
THE ACCIDENT**

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NFPA Reports on "Large Loss" Fires

During the year 1952 there were 275 fires in the United States and Canada with individual losses of \$250,000 or more according to the annual survey released by the National Fire Protection Association. These 275 fires produced an aggregate loss of \$182,243,000.

The number of large loss fires in 1952 was 9 per cent less than 1951, when 302 "large loss" fires occurred, the largest number in history. The 1952 loss figure for the 275 fires was only exceeded by the years 1947 and 1951.

Just as many large structural fires occurred in towns of less than 20,000 population (or in unincorporated areas) as in the larger cities of 20,000 or over. The record indicates the need to emphasize that those high valued properties located beyond city limits must provide full scale exterior as well as interior fire protection.

When properties are idle, fires seem to be busiest. According to the NFPA Study approximately 63 per cent of the large loss structural fires last year occurred while the property was either not in operation or only in partial usage pointing to the additional need of automatic protection and adequate watchman service.

Occupants were the first to discover 46 per cent of the fires which subsequently caused losses in excess of \$250,000; outsiders were the first to discover 42 per cent of the fires which developed into large losses. Outsiders detected 21 per cent more of the fires that destroyed mercantiles than those that destroyed manufacturing plants.

The reasons, of course, for the greater employee detection of incipient fires in manufacturing plants are (1) longer working hours and (2) more fires caused by operating hazards. It follows that knowledge of what to do in case of fire is particularly important in industrial occupancies. Procedures for calling the fire department, assembling the fire brigade and using fixed and portable fire appliances should be prearranged.

Watchmen were the first to detect 6 per cent of these serious fires. In 19 instances, however, watchmen failed to detect the fires promptly. In three instances watchmen fought the fire before giving the alarm.

Heavy concentration of combustible stocks in single fire areas, poor stock sub-division and high piling were notable factors in a large number of cases again in 1952. Poor housekeeping conditions, including heavy accumulations of dust on beams, girders, etc., influenced the fire spread markedly in a total of 34 cases.

In 60 per cent of the large loss building fires, failure to subdivide areas to reasonable dimensions permitted the fire to reach large loss proportions. This experience is identical with that in 1951. In 77 per cent of the multi-story building fires, unenclosed stair or elevator shafts were responsible for vertical spread.

The New ALBINA

Circular!

MECHANICAL STIRRUP



Ideal for: Grain Elevators, Tanks, Storage Bins, Etc.

ALUMINUM DIAMOND PLATE DECK PLATFORM

Platform as shown may be used as a 6, 16, 22 or 28-ft. swing stage. Platform consists of two 6-ft. and one 16-ft. sections. Can be used as a swing stage, single stirrup or basket. Air or electric operated.

Safety approved by
State, Municipal,
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LOUISVILLE

ALUMINUM LADDERS • PLANKS STAGES

For Every Industrial Use



The complete line of aluminum maintenance and construction equipment . . . built with Louisville patented rung assembly . . . reinforcing and locking the rung to the side rail. In plant after plant Louisville equipment is writing new chapters in SAFETY—DURABILITY—ECONOMY.

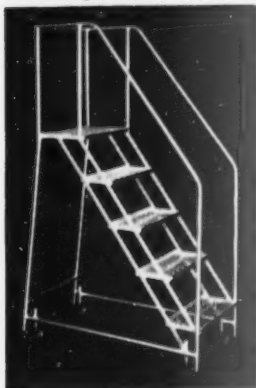
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LOUISVILLE LADDER COMPANY

1101 W. OAK ST.—DEPT. 15—LOUISVILLE 10, KY.

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ALUMINUM PRODUCTS

COTTERMAN
WELDED STEEL SAFETY LADDERS
 For Filing Rooms—Stock Rooms—Vaults



SAFE
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STRONG
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EASY TO MOVE
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NON-SKID STEPS

45"—5 Step

New improved design now being made from 1" diam. round furniture tubing.

Mounted on Swivel Brake Casters which allow the ladder to be rolled freely when no one is on it. When you step on the ladder the rubber cushioned legs rest on the floor and prevent rolling.

Made in 7 heights:—18" 2 Steps, 27" 3 Step, 36" 4 Step, 45" 5 Step, 54" 6 Step, 63" 7 Step, 72" 8 Step.

All are made in either 20" or 26" width.

Send for Circular No. 52-N and prices on these ladders and our full line of Wood Rolling Ladders.

Manufactured by

I. D. COTTERMAN

4535 N. Ravenswood Ave. Chicago 40, Ill.

Ankle Action Suction
Grip, Always Flat

MAKES

Johnson Crutch Tips
the Choice of Thousands

You can buy them in most orthopedic hospitals and drug stores or order direct.

65c a pair, postpaid

A DANDY CANE TIP.

Manufactured of high grade flexible rubber on the same principle as our popular ladder shoes which are used in all industries and a common sight on ladders of workmen in every city and town.

Safely yours,



JOHNSON LADDER SHOE CO. EAU CLAIRE, WIS.

Industrial Floors

(From page 11)

Rubber is resilient and has high dielectric strength which is undesirable where static electricity is a problem. Conductive types of rubber flooring are suitable for such locations. Abrasive rubber flooring is useful for stair treads, elevator sills, thresholds.

Wood block is used for heavy duty general purpose floors. A floor of this type is durable, relatively noiseless and comfortable under foot and does not become slippery. If blocks are laid on a smooth, rigid base, the floor will stand up under heavy trucking and is not likely to crack. Blocks should be impregnated with creosote for floors in contact with moisture or liquids.

Blocks should be set in high melting point pitch. Ordinary pitch or tar filler may stick to wheels and shoes in hot weather.

Wood plank. Hard, close-grained wood provides a floor that is comfortable and reasonably durable under foot traffic. Under moist conditions, boards have a tendency to swell and buckle. A heavy sub floor makes the surface flooring more resistant to moisture and traffic. Under heavy wheel traffic, boards may loosen or break frequently, causing hazardous conditions and excessive maintenance.

Fabric surfacing. Heavy fabric coated with mineral grains is used indoors and out for stair treads, ramps and around machines. The material can be applied to concrete, metal or wood. It comes backed with adhesive which adheres to the surface under pressure. It wears well and is resistant to water, oil and weather.

Steel plates are easily assembled and are serviceable for platforms, stair treads, floors, hatchways. They wear well and are easily cleaned but are highly conductive of heat and are noisy.

Plates are made with checkered extruded patterns which offer good trac-

tion and resistance to slipping. When worn, plates can be roughened with a welding torch.

Steel plates are also used over ducts which carry electric circuits or pipe lines. They can be removed easily for servicing equipment underneath.

Magnesite is suitable for light traffic. It must be laid on a rigid base. It should not be used where there is excessive moisture or hydrostatic pressure, as in basements. A coating of bituminous paint is necessary to protect pipe and other metal surfaces in contact with magnesite since it corrodes some metals. It is resistant to oils.

Terrazzo floors are durable and easily maintained. The mixture can include abrasive aggregates to provide a non-slip surface. Sealers make it impervious to most acids. Where there is excessive foot traffic, as in building lobbies, rubber mats are used to reduce slipping hazards and protect the surface.

Lead is used for floors exposed to acids and as insets or mats for secure footing in operation of woodworking machines or other places where the results of a slip and fall would be unusually serious. Lead is conductive of heat, nonsparking and quiet.

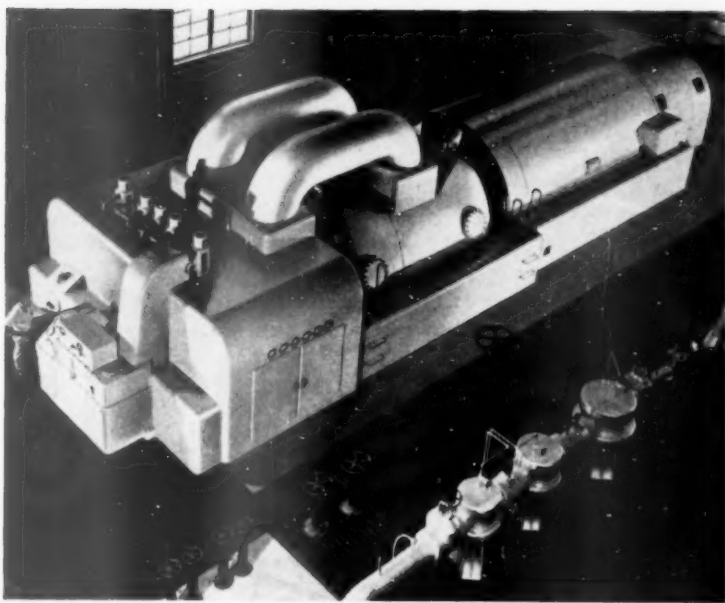
Zinc is also used for its nonsparking qualities in such locations as compounding rooms where fire and explosion hazards exist. Zinc is attacked more readily by acids and alkalis.

Cork tile is quiet and resilient and has high anti-slip and insulating ratings. In dry locations it stands up well under light traffic. It is expensive for most industrial uses but it will reduce damage to dropped tools and materials.

Abrasive metal plates are used for thresholds, elevator sills, stair treads, and other locations where appearance and a durable, non-slip surface are essential. Plates with abrasive particles incorporated in the surface are avail-



Many flooring compounds can be used for patching or for resurfacing whole floors. A good subfloor is important. (Flexrock Co.)



Three types of flooring are used in this interior: checkered steel plates, grating and concrete. Paint is used effectively on machinery and on concrete. (Allis-Chalmers)

able in both steel and non-ferrous metals.

Conductive floors are important in the control of static electricity where explosives are manufactured or where flammable gases, dusts and vapors may form explosive mixtures. Conductive floors ground static electricity and stray currents.

Grille floors and gratings are satisfactory for such uses as platforms, catwalks, stair treads, fire escapes and over floor openings. They offer a sure footing and are practically self-cleaning.

Power Truck Operation

WHICH end of an industrial power truck is the front, and which is the rear? This has been a frequent point of disagreement among both manufacturers and users of power trucks.

Most manufacturers prefer to call the platform part of the truck the front, and many users follow the same practice. Points in favor of this method of operation are:

1. The operator is facing his controls and can act quickly in an emergency.
2. He can watch the load on the platform better in negotiating narrow passageways and aisles.
3. He has a better chance of escape in case anything goes wrong.

Points in favor of the operator riding ahead of the load are:

1. He will be more careful to avoid hitting anything because injury is more likely to occur.
2. He can see ahead much better.
3. He can negotiate corners and have a better clearance. He is in a better point of observation, particularly at blind corners.

This difference of opinion brings out the need for standardization of power truck controls. Manufacturers of these vehicles have varying ideas of what controls should be used, and, consequently, in some plants, the operator may be confused because he is required to operate a truck with one type of control and then change to another truck with a different control system.

A program which would obtain the manufacturers' cooperation in deciding on one universal control for power trucks would be a worth-while project.

A good start in such a program would be standardization of the warning signal button. Some manufacturers, at the present time, use a foot button, some a finger button, others a button which the operator depresses with his knee or thigh.

It is agreed by most companies that some sort of operating platform guard is necessary, and experience shows its value. Some companies prefer merely a bumper type guard, while others prefer a higher guard which comes almost to the knees of the operator. A third group prefers a guard which completely shields the operator to his waist.

It is pretty well agreed that such guards should be completely enclosed in the back, leaving one or both sides open so that the operator may easily climb in or out.

Such guards are usually made of heavy sheet metal and are sometimes reinforced with an angle iron frame. In addition to the sheet metal guard, an angle iron is sometimes placed around the outside of the guard to allow about two inches clearance between the guard and anything it may bump against. This additional guarding will prevent the operator from getting his fingers mashed between the guard and any object which he might strike.

As in many other safety activities, education of power truck operators is a most important step. Only by constant education and by programs of strict enforcement can speeding and reckless driving be curbed.

Fire Hazards of Industrial Trucks

Industrial trucks, whether ram, fork or crane type, can be powered by gasoline engines, gasoline-electric power units, or storage batteries. These power plants in themselves present a very definite fire hazard, says *Factory Mutual Record*.

One case mentioned involved a battery-powered truck in a food warehouse. A spray of leaking hydraulic oil used in the elevator mechanism became ignited by an electrical spark or hot resistor. The hydraulic lines burned through and spread to a railroad car.

The truck was not equipped with an extinguisher. The plant fire brigade finally put out the fire. There were 24 fires due to battery-operated trucks reported by *Factory Mutual* plants in a 10-year period.

Each industrial truck should be equipped with a 2½-pound carbon dioxide extinguisher; a 4-pound gas-pressured dry chemical extinguisher, or a 1-quart vaporizing liquid extinguisher. The sizes listed are the smallest approved for industrial use.

In the same 10-year period, 268 fires involving gasoline-powered trucks were reported. This type of vehicle is in wider use than the electric models and the nature of its fuel increases the hazard. Of these fires, 145 occurred during refueling.

Trucks should be refueled in a safe location, away from storage and manufacturing areas—preferably outdoors. The engine should be shut off during refueling and care exercised to avoid spilling fuel or overflowing the tank.

Collision hazards also cause damage. In two instances lift trucks broke sprinkler pipes, causing heavy damage to stock.

Why People Fall on Stairs and Ramps

Unsafe Conditions:

1. No handrail; handrails too low.
2. Improper illumination.
3. Poor housekeeping.
4. Faulty design, construction or location.
5. Wet, slippery or damaged surfaces.
6. Defective treads or mats on stairs.
7. No curbing on ramps.

Personal Causes:

1. Haste or inattention.
2. Failed to use handrail.
3. Unsafe clothing, such as high heels, dangling trouser cuffs, etc.
4. Obstructed vision while carrying objects.
5. Horseplay.

Only *Safe-Hi* ladder shoes... HOLD ON ALL SURFACES



Smooth,
Dry

The *rubber* in the Safe-Hi ladder shoe tread holds the ladder firmly on all dry surfaces.



Wet,
Slick

The *cord*, combined with the rubber in the Safe-Hi ladder shoe, securely holds the ladder on all wet surfaces.



Soapy,
Greasy

The *straight ridges* across the line of slippage, act as a series of squeegees, to scrape off foreign substances and grip the surface.



Ice,
Snow

The *self-sharpening spike*, made with a tempered tool steel core and instantly available with a flip of the hand or foot, holds firmly on snow or ice.



Safe-Hi LADDER SHOES

Stop ladder slipping accidents in your plant with Safe-Hi ladder shoes! Tests prove that the Safe-Hi ladder shoe—the only ladder shoe which gives the essential combination of cord, rubber and ridges in the tread, and a self-sharpening spike—will hold far beyond the recommended safety angle on all surfaces. The “high visibility” yellow on each Safe-Hi shoe, meets the safety color code, protecting against stumbling, tripping.

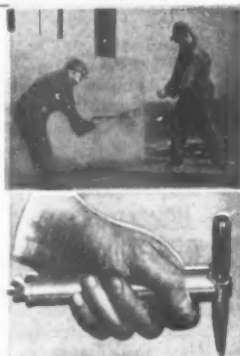
Approved by Underwriters' Laboratories for all surfaces, Safe-Hi ladder shoes are available in two models—steel and non-spark metal; and two widths—1½" for straight ladders, and 15/16" for step ladders. For consistent ladder safety—specify Safe-Hi ladder shoes!

Safe-Hi CHISEL GRIPS

Now you can speed up production with safety! The new Safe-Hi chisel grip makes it easier to reach hard-to-get-at places, permits faster, more accurate work, prevents “creeping,” eliminates smashed hands and fingers and prevents injuries from flying chisels.

18", two-man model—securely holds any large, sledge-driven tool up to 2¾" in diameter.

6", one-man model—securely holds any tool up to 1¼" in diameter.



Safe-Hi SAFETY BELTS



This new, different chest-waist belt distributes shock load to two entirely separate areas of body, eliminates “slipping out” because of self-maintaining adjustment, light (wt. 1 lb. 13 oz.), comfortable, holds wearer erect after stopping. Other belts and shock absorbers, including the construction belt which fully meets U. S. Govt. Spec. 406-C, available. Consult us on your specific problems.

Safe-Hi WALL GRIP

The Safe-Hi wall grip holds the top of the ladder securely on all smooth walls. Prevents side slipping, and helps to hold the bottom of the ladder.

Safe-Hi POLE GRIP

Holds top of ladder on any pole, pipe or corner. Fits any ladder. Prevents sudden tipping which causes workers to plunge off ladders.



CONTACT YOUR SAFETY DEALER OR WRITE TO:

ROSE MANUFACTURING CO.

1731 ARAPAHOE STREET

DENVER, COLORADO

Ventilation

VENTILATION has been defined as the process of supplying air to or removing it from any space. This may be accomplished by either natural or artificial means.

Basically this involves provision for general air requirements for the health and well being of occupants. Where processes are not injurious to health general ventilation is satisfactory. It is also satisfactory where dilution of the air contaminant will keep the concentration below permissible limits for continuous exposure.

Where toxic materials are handled, removal of air contaminants at their source is necessary.

Air conditioning means control of physical and chemical properties of air. It includes control of temperature and humidity as well as air motion and removal of contaminants.

Heating and humidifying the workroom air in winter and cooling and dehumidifying it in summer are involved. In the public mind it is associated with summer comfort air conditioning as provided in theaters, restaurants and stores, and in an increasing number of offices.

Air conditioning is also important where the product requires uniform temperature and humidity and freedom from dust. The needs of the product are not necessarily those best suited to personal comfort.

With air conditioning and modern lighting the plant is independent of climate. The building may be windowless or fixed sash windows may be used for psychological reasons.

General Ventilation

Ventilation is often made more expensive and complicated by the necessity of maintaining a comfortable temperature in the room. Exhausting impure air is usually practicable but in cold weather it may be difficult to warm large volumes of incoming air.

Natural ventilation is adequate for some buildings housing non-hazardous operations. Air circulation is aided by doors, windows, roof ventilators and monitors. The number of outlets should be planned for hot weather when the temperature difference inducing the draft is at the lowest point.

Air intakes should be located so that incoming air is properly tempered and

does not cause uncomfortable drafts in cold weather.

Artificial general ventilation requires properly located inlets and outlets. Air coming into the room must be uncontaminated and discharge points should be located to avoid recirculation.

When the contaminant is heavier than air, openings at floor level permit its escape.

Fans and blowers. Both portable and stationary types are useful for increasing circulation of air which affords relief from heat. They are not substitutes for exhaust ventilation where air contaminants should be removed.

For moving large volumes of air blowing is more efficient than suction.

Devices for maintaining air circulation become less effective as temperature and humidity rise.

Dust and Gas Problems

Dust problems are usually more difficult than control of gases, vapors, mists and fumes. Dusty operations tend to project particles so that the hood must provide velocities sufficient to draw them into the exhaust system.

Exhaust hoods should be enclosed as much as possible or the hood should be located to take advantage of the directional effects of the dust flow.

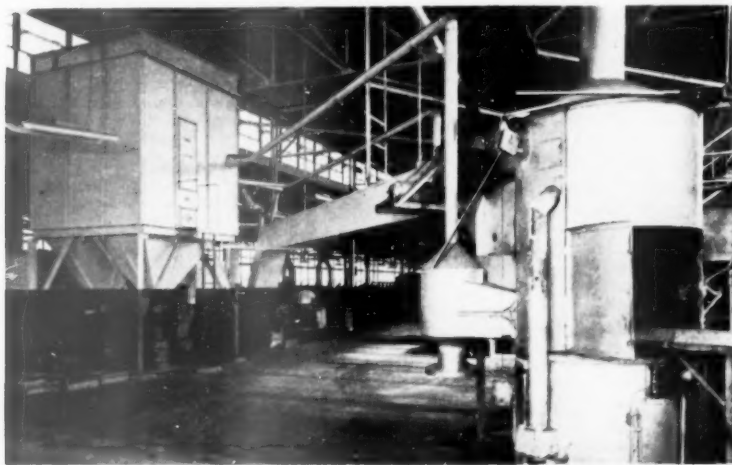
Dust removal systems generally require higher air velocities and ducts of heavier gauge metal than those designed for gases.

Control Measures

Where there is a definite source of air contamination, general ventilation alone is seldom sufficient. Control measures involve three steps:

1. Identifying the substance and locating its source.
2. Atmospheric sampling to determine nature and extent of contamination.
3. Engineering control measures.

Control at the source may involve one or more of these measures:



Lead refining kettle with hood enclosure around conveyor discharge. Conveyor housing and ventilation ducts lead to dust collector at left. Stack over refining kettle carries no lead oxide fumes but removes combustion products from gas-fired unit. (American Wheelabrator and Equipment Corp.)

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1. Isolation or enclosure of the hazardous operation.
2. Local exhaust ventilation.
3. Operational changes involving substitution of process or materials.

Isolation confines the operation to a definite location. Exposure of workers is either eliminated or restricted to a few selected, trained and equipped operators.

Examples of combining exhaust ventilation with isolation and enclosure are: sandblasting rooms, shakeout and tumbling-barrel operations in foundries, dry mixing, and mixing of volatile liquids.

Processes creating excessive heat, humidity or noise should also be isolated wherever possible.

Local Exhaust Systems

Local exhaust systems are an important means of occupational disease control. Their purpose is to create a sufficient movement of air to withdraw contaminants at point of origin and convey them to a safe point for disposal.

An exhaust system consists of four major parts:

1. Hoods or enclosures near source of contaminant.
2. Piping to connect hoods into system.
3. Collection equipment.
4. Fan.

Each part has its independent function but all must be designed to work together efficiently.

The exhaust hood is the most important part of the system. It should enclose the process as completely as possible. Air velocity decreases approximately with the square of the distance from the hood opening.

Air velocity for effective control varies with the process and material exhausted. Generally speaking, the better the enclosure and design of the hood, the less need for high velocities.

Hoods or enclosures may be in the form of booths, canopies, lateral hoods, downdrafts through grill openings below the process, or slot-type hoods. The object in each instance is to remove the contaminant without drawing it through the breathing zone of the operators and with minimum interference with processing.

Efficiency of hoods can be increased by addition of flanges.

Ducts connect the hoods to the central fan, distribute the air flow in direct proportion to the requirements of each inlet, and maintain adequate pipe velocity to convey the contaminant to the point of discharge.

The system should be balanced so that each hood draws the proper amount of air. When this condition has been obtained, all means of adjustment should be permanently fixed. The areas of branch pipes and main ducts can be calculated to give the correct air velocities throughout the system.

Material used for ducts must resist abrasive action of dust or corrosive effect of gases and vapors.

Sharp turns in ducts should be



Ventilation for welding booths. Exhaust through 5-inch flexible tubing keeps dust and gases at a minimum. (Reliance Electric and Engineering Co.)

avoided. They take extra power and cause a large pressure drop.

Traps with clean-out gates should be provided at the bottom of vertical runs, and clean-out gates at regular intervals on the bottom side of horizontal runs.

Fans should have a capacity slightly higher than calculated requirements to allow for leakage in the system, accumulation of material on fan blades and similar difficulties.

Where the contaminant is hot and has a natural tendency to rise and the operation can be provided with an effective enclosure type hood, natural draft ventilation is often satisfactory.

Disposal of Contaminants

Equally as important as collecting the air contaminants is its proper disposal. Gases, vapors and mists may often be discharged to the outside atmosphere at a point where they will not recirculate around the premises in harmful concentrations.

Dusts, both harmful and nuisance, require the use of dust collectors in the system.

Recirculation of air from exhaust systems is not generally desirable, particularly when the air has contained gas or fumes. Where only nuisance dusts are involved recirculation after cleaning is often permissible.

Recirculation is not desirable where dusts containing lead, silica, asbestos, and others, are handled.

Air coming from the cleaning device must fall within the permissible range of harmful or flammable dusts.

Dust Collectors

Methods of removing dust from the air exhausted by the system include:

1. Filtration
2. Electrical precipitation
3. Wet collectors
4. Dynamic precipitation
5. Supersonic flocculation

Filters are the oldest and simplest way of removing dust. They are porous mediums through which dust-laden air

is drawn. Some filters are designed to collect dust in the form of a layer on the upstream surface. This is characteristic of cloth and paper filters. The thicker types, such as those of metal mesh treated with oil, have greater dust-holding capacity.

A practical filter should have these characteristics: (1) low initial resistance to air flow; (2) reasonable length of service; (3) efficiency under changes of temperature and humidity; (4) low flammability; (5) low replacement cost or ease of cleaning; (6) low maintenance cost; (7) freedom from odors.

Electrostatic precipitation. This method is highly efficient, particularly for fine dusts which are difficult to remove by other methods. It offers low resistance to air flow.

Electrostatic precipitators have comparatively low efficiency in collecting large particles moving with considerable force, and for high concentrations of dust. They are valuable when the manufacturing process requires a practically dust-free atmosphere.

A combination of viscous filter and electrostatic precipitation with a self-cleaning feature on some models is available. It solves the problem of dust capacity and of heavy particles.

Cyclones. A cyclone consists of an outer cylinder fitted with an inverted cone-shaped hopper and an inner concentric cylinder which serves as a discharge duct. Air from the main duct of the exhaust system, under high velocity, enters the large chamber where the air is given a circular motion. The heavier particles are thrown to the outer wall by centrifugal force and fall along the wall. Air escapes through the top.

Cyclones are most effective for large particles, such as sawdust, shavings, heavy lint, etc. After passing through them, air cannot be returned to the

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Washrooms and Lockers

FACILITIES for personal cleanliness, comfort and convenience are conspicuous factors in good working conditions. Adequate and well-maintained washrooms, toilets and lockers encourage better attitudes and attract desirable workers.

Attention to these requirements in planning industrial and commercial buildings will insure sufficient space and convenient location. Otherwise they may have to be fitted later into less suitable space.

Many plants have outgrown their original facilities. A survey of present equipment checked against the number of employees will show whether additions are needed. Also, equipment should be examined critically according to modern hygienic and decorative standards.

Assistance in planning new quarters or modernizing existing equipment is offered by many manufacturers of washroom equipment and supplies.

Higher standards of sanitation and lower maintenance costs can be achieved at little extra cost when buildings are planned. Dirt catching cracks and corners and dust collecting surfaces can be avoided. Floors and walls of easily cleanable material can be specified.

Location. Depending on the size and type of plant and its operations, lockers, lavatories and toilets may be in one central location or scattered through the plant.

In smaller plants, washrooms and lockers are usually near the entrance.

Toilets should not be more than 200 feet away from any work place. In multi-story buildings, one on each floor is desirable. If that is not practicable, they should not be more than one floor above or below the work place.

Washrooms in large one-story buildings usually are scattered throughout the building. Where there are many small isolated buildings, as in chemical plants and railroad yards, or where much of the activity is outdoors, a separate building may house all these facilities.

Accommodations should be located so that employees will not have to cross highways or railroad tracks to reach them.

When lockers and washrooms of a large plant are near the main entrance, small rooms with lavatories and toilets are often scattered through the plant. This saves the worker's time and makes it possible to close the main room during working hours, lessening danger of theft and requiring less supervision.

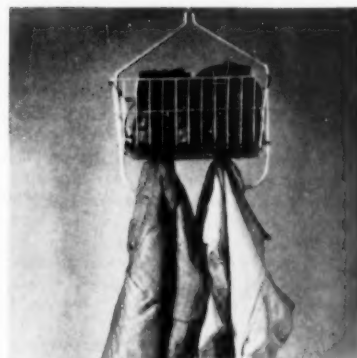
Separate washrooms and lockers are desirable for departments where there is exposure to excessive dust, dirt, heat, vapors, or moisture. These need more lavatories or shower baths than cleaner departments.

Offsetting the advantages of scattered facilities, is the higher cost of installation and maintenance. Centralized toilet and washing facilities are often preferable where women are employed. In some plants a full-time attendant may be needed.

In some large plants with underground passageways connecting buildings and departments, personal service facilities are often located along them, conserving space for manufacturing operations. Another space-saving method is to locate them on balconies.

Light. Fixtures should provide sufficient light in all parts of the room. Walls, ceilings and partitions should be light in color to conserve light and encourage cleanliness.

Ventilation. Unless the washroom has



Baskets which can be raised to the ceiling are used in some industries for storing clothing. Where garments become damp they have a chance to dry out between shifts.

sufficient outside windows for natural ventilation, forced ventilation will be needed.

Floors, and walls to a height of at least six inches, should be of impervious material, such as glazed tile or concrete. Walls should form a tight joint at the floor level, or there should be a cove base at least six inches high.

Wash Fixtures

Group washing equipment. In industrial plants, institutions, schools and other establishments where facilities must be provided for large groups, circular wash fountains are the most frequent choice.

Eight to 10 users can be accommodated at a 54-inch circular fountain and 5 to 6 at a 36-inch unit. Fewer valves and plumbing connections mean additional economies in installation and maintenance.

Economy of water is another advantage. Several persons washing at a circular fountain use little more water than one at an individual basin. Each user washes in clean running water of regulated temperature. A foot or hand-controlled mechanism regulates the flow.

Semi-circular units 36 or 54 inches wide mounted against a wall are used for narrow or irregular washrooms.

Precast stone and marble are the most frequently used materials. Some models are also available in enameled iron and stainless steel.

Individual basins of vitreous china or enameled iron make an attractive installation where comparatively small groups are to be accommodated.

Mixing faucets, rather than separate faucets for hot and cold water, are recommended. Hot and cold handles should be plainly marked, with the hot water valve always on the left side. Thermostatic control of water temperature is a desirable safeguard.

Stoppers should not be used. Faucets should permit washing in running water.

Where first cost must be considered, enameled troughs may be used. Over these are hot and cold water pipes with

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Washfountains have been distributed along the length of the locker room. Air in locker room is kept fresh by under floor ventilating system with fresh air inlets in concrete bases and mechanical roof ventilator. Individual lockers have two compartments—one for street clothes and the other for work clothes. Sloping locker tops and concrete bases make housekeeping easier.

Hot Weather Hygiene

MAINTAINING HEALTH, comfort and efficiency in hot weather requires close attention to working conditions by the employer and observance of reasonable precautions by the worker. Similar measures are needed where operations produce similar conditions of heat and humidity.

Fans and blowers are important aids to comfort in hot surroundings. Their effectiveness decreases as heat and humidity rise.

Good ventilation of the workplace and adequate washroom facilities and drinking water are essential in reducing discomfort. Canteens and lunchrooms also help to relieve fatigue.

Acute Ailments

Exposure to extreme heat, especially when accompanied by physical exertion, may result in heat cramps, heat exhaustion, or heatstroke. Knowledge of correct first aid treatment for each type of ailment is important. All cases should receive medical attention.

Heat cramps are due to excessive loss of salt and moisture from the body. They come suddenly and may involve skeletal or intestinal muscles. Even if the moisture of the body is replaced by drinking plenty of water, loss of salt may cause heat cramps.

Heat cramps are relieved in a few hours by proper treatment but soreness may persist for several days.

Heat exhaustion is a shock-like state also resulting from loss of salt and moisture. Symptoms are pallor, relatively low temperature, weak pulse, a feeling of restlessness or anxiety, and sometimes unconsciousness. It is a much more severe condition than heat cramps and is occasionally fatal. A person with either condition should be given salted water, if conscious, and

put under medical care as quickly as possible.

Heatstroke (also known as sunstroke) is caused by exposure to an environment in which the body is unable to cool itself sufficiently. It is not necessarily the result of exposure to the sun. As a result, body temperature rises, and the heat-regulating mechanism breaks down.

Symptoms are severe headache, flushed face and high temperature, visual disturbances and loss of consciousness. Death may occur within a few hours, but if timely treatment is available the patient has a good chance of recovery. One of the after-effects is inability to withstand heat.

In general, the same precautions will help to prevent or minimize all types of disability due to heat.

Serious exposures include boiler and engine rooms, foundries, steel mills and glass plants. Seasonal heat hazards are found in construction work, public utility, highway and railroad maintenance, and farming.

Sunburn can be painful and dangerous. In strong sunlight, the head should be covered and exposure of the skin kept at a minimum. Tan should be acquired gradually. Treatment is the same as for any other type of burn.

Use of Salt

Maintaining the salt in the body at an adequate level enables men to work at strenuous occupations in high tem-

peratures. For sedentary workers, normal use of salt with food may be sufficient, but those whose jobs require greater physical exertion may not take enough by this method.

Dispensing. The most convenient and popular method for providing salt is in tablet form. The 10-grain size is more frequently used, and it may be obtained either as pure salt or in a combination of 70 per cent salt and 30 per cent dextrose. Tablets containing dextrose are more palatable and more easily assimilated by many persons.

For those who find difficulty in taking even a moderate amount of salt, enteric-coated tablets are available. These pass through the stomach intact and dissolve in the intestines.

In most plants, a dispenser for salt tablets will be found beside the drinking fountain. Dispensers are made in several styles and sizes.

The drink of water is as important as the salt. A full glass of water (eight ounces) should be taken with each tablet.

Another method is to add salt to the water. This is practicable where the drinking water is not used in the industrial processes. Concentrations of from .1 to .5 per cent, depending upon the temperatures and nature of the work, are used in some plants.

Use of salted drinking water should be under medical supervision.

Caution. Persons with kidney or heart disease or high blood pressure should seek medical advice on the use of salt. However, such men should not be placed on jobs where they would be exposed to high temperatures or heavy manual work.

Drinking Water

HEALTH and efficiency, as well as physical comfort, require an adequate supply of pure drinking water. It can be provided at a moderate cost in any industrial plant.

Drinking facilities should be conveniently located and inviting in appearance. Workers will not drink enough water unless it is clean, cool and palatable. The attractiveness of the dispensing fixtures is also important—particularly for women employees.

In providing for the needs of workers, the following should be considered:

1. Number of persons to be served.
2. Type of work—light or physically strenuous.
3. Temperature of workroom.
4. Purity of water.
5. Temperature of water.
6. Design of fixtures.
7. Location of outlets.

One outlet for each 50 employees has been suggested as a minimum. More will be needed if the temperature is high or the work involves physical exertion.

If outlets are too far apart workers will not drink enough water or they will spend too much time away from

work. It should not be necessary to walk more than 50 feet for a drink.

Water supply. Pure water is an important responsibility of every city, and health departments maintain a close watch over the water supply. But when the plant is located outside the city limits, and for temporary operations such as construction, public utility and oil-field work, the employer must supervise the water supply. It should be analyzed regularly.

If unapproved or "service" water is used for industrial processes or for fire protection, signs should be posted warning against its use for drinking. Care must be taken to avoid possibility of cross connections between the two systems.

Sterilization. Water of questionable purity can be made safe for drinking by chlorination or boiling. Compounds for sterilizing water, some in convenient tablet form, are available.

Filtration is desirable for removal of sediment but this will not kill harmful bacteria.

Temperature of water. For workers who perform heavy manual labor, from

SALT IN DRINKING WATER

SALT is very necessary to health. Salt and water will keep you alive longer than water and food with the salt removed.

Your body consists of about 80 percent water. Salt is important in helping to keep the necessary amounts of water in all parts of your body.

But both the water and salt in your body gradually are being used up. One of the chief causes of these losses is heat which causes perspiration. A man working in summer sun or in the heat of boiler rooms, foundries, blast furnaces, bakeries, etc., may lose as much as two gallons of water through excessive perspiration in eight hours. Salt also is lost in all perspiration.

It is very necessary to replenish this salt and water lost from your body. Lack of salt is often a cause of heat cramps.

You can easily keep the salt content of your body normal by adding salt to your drinking water. Add a level teaspoonful of table salt to one gallon of water (or smaller quantities in the same proportion). Cool, not ice-cold, water is best for drinking.

Many companies provide salt for employees in tablet form, in convenient containers at the drinking fountains. Salt also should be used freely in summer foods and drinks.



SAFETY INSTRUCTION CARD No. 413

50 to 55 degrees F. is recommended. For office workers, restaurant patrons and others who are less active, the temperatures may be as low as 45 degrees.

Methods of Dispensing

Two approved methods of dispensing drinking water are: (1) Drinking fountains of approved design; (2) Paper cups provided at the outlet.

Drinking fountains with individual cooling units are more suitable for many types of industry than a central cooling system. Fountains should conform to specifications of the ASA Code Z 4.2-1942. Important features are a diagonal jet, which does not permit water to fall back on the nozzle, and a guard to keep the user's lips away from it. If ice is used for cooling it should be in a separate compartment without direct contact with the water.

Some older installations in factories, offices, stores and public buildings which do not conform to hygienic standards can often be modernized at reasonable cost.

Desirable accessories in drinking fountains are line strainers and pressure regulators. An outlet for filling glasses is also useful, particularly for office use.

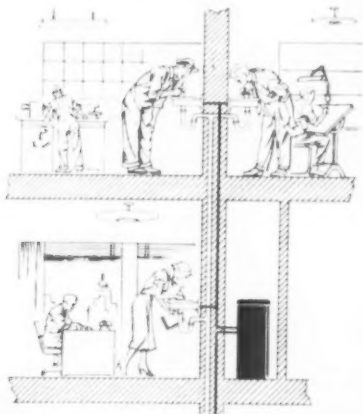
A dispenser for salt tablets should be located near the drinking fountain.

Hazardous locations. For use where flammable gases, vapors and dusts may be found, explosion-proof fountains are available.

Paper cups should be kept in dust-proof containers and receptacles provided for used cups. The container must be kept filled or workers will salvage old cups.

Maintenance. A cuspidor or sand urn at the fountain will prevent much discarded chewing gum, tobacco, etc., being deposited in the fountain bowl. Regular cleaning of porcelain and metal keeps the fixtures attractive and sanitary.

Maintenance of drinking fountains must be watched to prevent unsightly and unsanitary conditions. A few em-



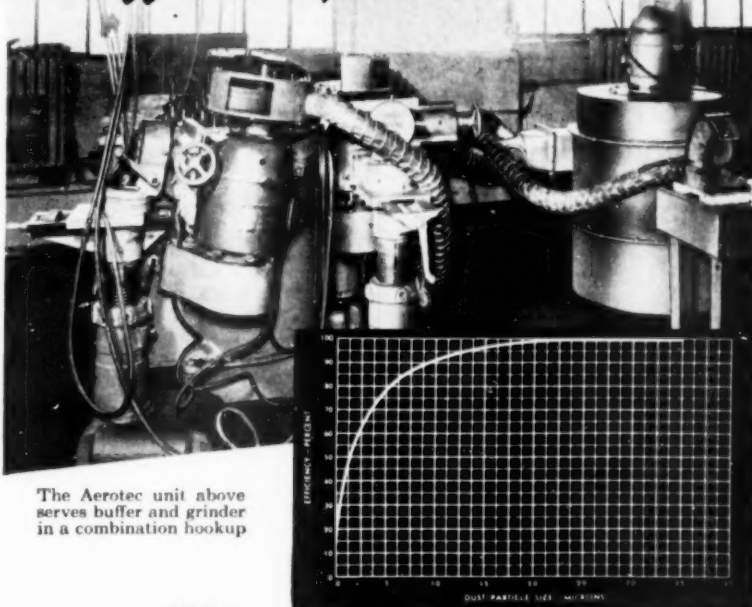
Drinking water can be served through several wall fountains from a remote type electric water cooler. (Westinghouse)



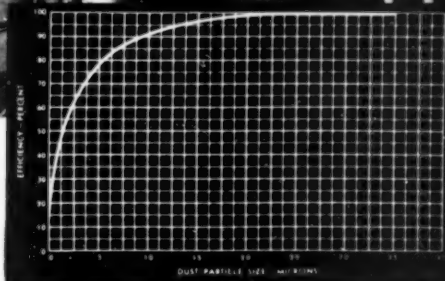
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Our engineers, backed by years of experience in solving industrial dust problems, are prepared to assist you. Let them show you how to get the dust collection efficiency indicated by the chart above. Call or write today.

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employees will need reminding of the importance of habits of cleanliness and education is easier when accompanied by a good housekeeping program.

Isolated Jobs

Portable containers. For many jobs remote from the city water mains, as in construction work, public utility and railroad maintenance, in mines and other isolated working places, an open water bucket too often is the means of supplying drinking water, with one cup or dipper serving the entire crew.

Portable coolers, with dispensers for paper cups, are particularly useful on temporary jobs where employees must work at a distance from a source of pure water. The container should have a tight-fitting cover.

Portable drinking fountains provide another method. One model uses a hand pump to maintain pressure. Slight pressure on a valve releases a jet of water at an angle, as in approved permanent installations, and a guard prevents lips from coming in contact with the nozzle. Insulation keeps water cool for several hours.

Salt tablets in individual packages should be available in hot weather.

Controlling Noise and Vibration

EXCESSIVE noise in a workplace is more than an annoyance; it can be a definite occupational hazard. Individual tolerance of noise varies but continued exposure causes nervous tension and fatigue. Permanent impairment of hearing may result.

Level of Sound. The unit of measuring sound is the decibel. The decibel scale is strictly a physical scale. It does not measure the frequency, which also affects the sensation felt by the ear.

In general, the higher the frequency, or pitch, of the sound, the more trying it is to the ear.

Between zero and 10 decibels is the threshold of audibility.

From 10 to 75 decibels is within the comfortable hearing range.

Noise above 90 decibels is considered injurious to the hearing and nervous system. At 120 it becomes acutely painful.

Noise Makers. Here are some noise levels recorded at three feet from various machines:

Punch presses—96-103.
Drop hammers—99-101.
Hydraulic press—130.
Automatic riveters—95-99.
Lathes—80.
Automatic screw machines—93-100.
Airplane riveting guns—94-105.
Airplane propeller grinding—100-105.
Looms—94-101.
Wood planers—99-110.
Wood saws—100.

The accumulated effect of smaller noises may also create an excessive total.

Measuring levels. Where noise is present more or less continuously it is

recommended that operations be tested with an approved sound meter. If a meter is not available, it may be assumed that noise is excessive where it is necessary to carry on conversation by shouting.

Methods of Control

Substitution of a less noisy process, such as welding for riveting, is sometimes possible. But in most operations there are four methods of attack:

1. Isolate vibrating machines by putting them on damping mounts of rubber, cork, springs, or other material.

2. Enclose noisy operations in insulated rooms.

3. Apply acoustical treatment to walls and ceilings.

4. Maintain machinery to avoid noise from worn and loose parts.

Frequently it is necessary to use a combination of measures.

Keeping floors in good condition and free from bumps is helpful. Rubber tires on hand and power trucks also make operations quieter.

Personal Protection. Where noise cannot be reduced to a comfortable level at the source, ear plugs or stopples often afford considerable relief. These are made of plastic, rubber or wax.

Stopples properly made and fitted have reduced noise from 25 to 30 decibels while permitting ordinary conversation. See Section 4, *Hearing Aids*.

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Controlling Air-Borne Bacteria

Control of air-borne bacteria in industrial and public buildings has been the subject of much research. In addition to the personal health aspect, control of such bacteria is sometimes required by manufacturing processes.

Ultra-violet radiation and chemical bactericides have been found capable of destroying bacteria, although practical methods of application impose numerous difficulties.

Ultra violet radiation using low-pressure mercury lamps with ultra violet transmitting glass or quartz envelopes will destroy many microorganisms. Application is by irradiating the upper air stratum of a room, beaming or screening to provide a narrow barrier of protective light, or inserting a radiation source in an air duct.

Radiations of adequate intensity are dangerous to eyes and skin. Lamps should not be in the range of vision.

Chemical bactericides are also used, propylene glycol being the most effective under most conditions. Effective concentrations are odorless and non-toxic to human beings. Use of chemical bactericides requires close control of humidity in the area to be protected.

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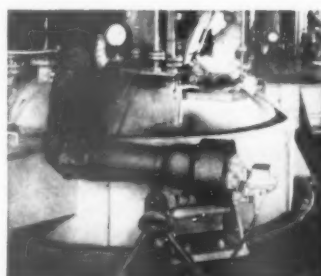
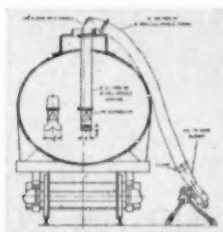
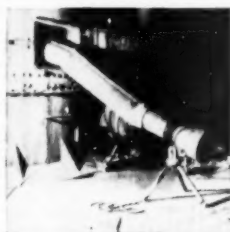
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☐ motors, generators, switchboards.
☐ wires and sheets.

- ☐ general man cooling.
☐ around cracking stills.
☐ exhausting welding fumes.
☐ stirring up stagnant air wherever men are working or material is drying.

NAME
 COMPANY
 ADDRESS
 CITY

(Write here any special ventilating problem you may have.)

COPPUS "BLUE RIBBON" PRODUCTS—Designed for Your Industry, Engineered for You

DEATH TO CARBON MONOXIDE, EXHAUST FUMES AND ODORS



CATALYTIC EXHAUST (A Houdry Catalyst Development) Reduces CO to a safe level

OXY-CATALYST, INC.
Wayne, Pa.

Air Pollution Control
Power and Energy
Waste Heat Recovery

- Kills all fumes and odors from exhaust gases of internal combustion engines using white gasoline.
- Assures absolute safety for employees, and increases efficiency.
- Simple, sturdy construction, rupture-proof under explosion.
- Replaces original muffler without changing clearances . . . and easy to install.
- Gives 2,000-2,500 trouble-free hours of operation, after which catalyst is quickly replaceable . . . and at low cost.
- Tested and listed by Underwriters Laboratories, Inc., and used in many of the nation's leading industrial plants.

WRITE FOR FULL DETAILS AND SPECIFICATIONS
and mention this magazine

Group of RUEMELIN Fume Collectors Keeps Shop Clear of Welding Fumes



This well ventilated welding department is typical of hundreds of similar installations. Welding operators appreciate smoke and gas-free atmosphere. Thousands in service. Many repeat orders. Collecting fumes at the source with local exhaust hoods has proven most practical in operation. It is particularly helpful in winter months when doors and windows are closed. Write for Bulletin 37-D describing all types of Ruemelin Fume Collectors.

RUEMELIN MFG. CO.

MFRS. & ENGRS. • SAND BLAST & DUST COLLECTING EQUIPMENT
3885 NORTH PALMER STREET • MILWAUKEE 12, WISCONSIN, U. S. A.

Washrooms and Lockers

—From page 59

mixing faucets spaced not less than 24 inches apart. Double-width troughs, or single-width troughs backs to back, save space.

Spray heads at basins or troughs encourage a thorough job of washing. They should be high enough above the trough to permit washing head, arms and shoulders under the spray.

Showers are needed in many industries, particularly where operations are hot or dirty, or where toxic materials are used. Requirements depend upon the health hazards of the processes. They range from one shower to every five men to one for every 15 men.

Shower installations may be of the compartment or the circular multi-stall type.

Floors and approaches should be of slip-resistant material, such as concrete with an abrasive surface. A curb 4 inches high should be erected around shower stalls to keep water within the enclosure.

Fungus infections. Warm moist air in shower rooms offers ideal conditions for propagation of the fungi that cause "athlete's foot." Floors and shower stalls should be scrubbed daily as a general sanitation measure. Disinfection by germicides is also helpful.

Preparations for toughening the skin, antiseptic food powders, and careful drying of the feet are among the preventives used. Pans of antiseptic solution at the entrance of the shower stalls are no longer considered effective for killing fungi.

Emergency showers. Quick-acting showers should be installed at convenient locations where caustics, acids and other corrosives are handled.

Skin Cleansers

Skin cleansers may be classified as soaps, sulfonated oils, and synthetic detergents.

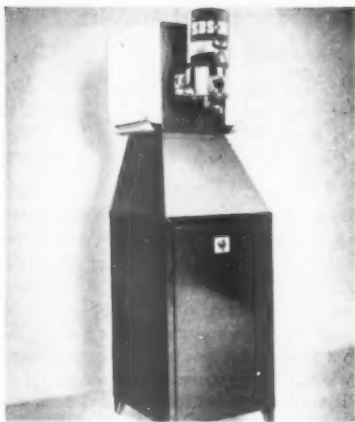
Powdered soaps are more economical than cakes. These consist principally of powdered hard soap and a water softener, to which a scrubbing agent may be added. Corn meal, the most commonly used scrubber, may be coarse or fine. Most of these soaps can be used with hard water.

Liquid soaps are generally satisfactory where a scrubber is not desired. They are frequently used in office washrooms and in first-aid rooms.

Soap should contain no free alkali and should show a low pH in dilute solution. This can be determined before purchasing.

Sulfonated oils are useful for dry and soap sensitive skins. They are frequently used where workers are exposed to the defatting action of petroleum oils and organic solvents.

Synthetic detergents of several types, gentle but effective in their action, are being used in many industries. They are particularly useful for removing oil, wax and tar.



Waterless skin cleansers are a recent development. This installation consists of a dispenser for the cleanser, paper towel containers and a receptacle for used towels. (Sugar Beet Products Co.)

Waterless skin cleansers are a recent development. They are said to be non-irritating but effective in removing grease and grime. Dispensers which include a receptacle for waste towels are portable and can be set up quickly where needed and without plumbing connections. Dispensers for paper towels can be easily attached.

Use of naphtha, carbon tetrachloride, turpentine and other organic solvents for skin cleaning should be avoided. Some are toxic, some are flammable, and all have a drastic defatting action. If they must be used to remove substances such as lacquer, which resist other cleansers, special work creams help to offset the loss of natural skin oils.

Germicidal soaps and synthetic detergents. Ordinary cleansers remove transient bacteria from the skin but are not effective in reducing those imbedded in the skin. Many germicides, such as phenol compounds, have been tested as an ingredient of soap but required impracticably high concentrations which made them unsuitable for daily use. A promising recent development is hexachlorophene which has been incorporated in soaps and detergents used for medical, surgical and deodorant purposes.

Drying the Skin

Paper towels meet sanitary requirements and are economical and convenient. Dispensers should be kept filled and receptacles for used towels should be provided.

Recessed waste receptacles take one more object off the floor, improving the appearance of the washroom and making cleaning easier.

Mechanical hot air driers are acceptable from the hygienic standpoint. They are foot operated and may be of the pedestal type or recessed into the wall. Equipment should be well grounded and the electrical connection permanently installed without extension cords or plugs.

Towel services are used by some establishments, usually stores and of-

fices. For industrial use, individual towels kept in lockers may not be changed often enough and they may come in contact with soiled work clothes.

Toilets

Toilets should be partitioned off from washrooms and lockers. Partitions of enameled metal are attractive in appearance and easy to keep clean. These partitions may be suspended from the ceiling or mounted on the walls.

Wall-mounted toilets make floor cleaning easier and quicker. The long, oval-rim type of toilet with open-front plastic seat is most widely used. Foot-

operated flush valves are often used.

The flushing mechanism should be rugged since employees often kick the handle instead of operating it by hand. Flush valves should be equipped with vacuum breakers to avoid back siphonage.

Minimum number of toilets specified by American Standard Code Z-4.1:

No. of persons	No. of toilets
1- 9	1
10- 24	2
25- 49	3
50-100	5
Over 100	1 for each additional 30 persons

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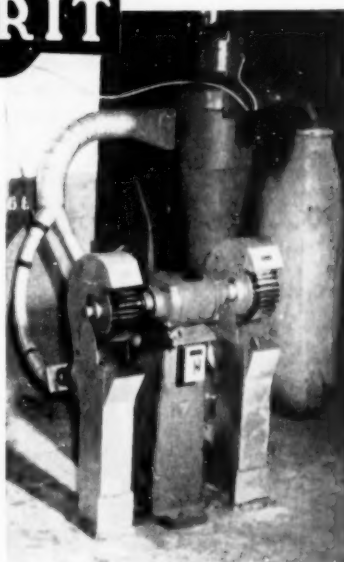
SLIM, TRIM and EFFECTIVE

TORIT



**DUST
COLLECTOR**

installed
with a
double end
polishing
stand



Torit Dust Collectors are available in both cabinet and cyclone types, in sizes ranging up to 5 h. p.

Here is a Torit 19-FB Dust Collector and Torit wheel hoods effectively capturing lint from two 12" by 5" brushes. Note the absence of all work interference and the minimum of piping.

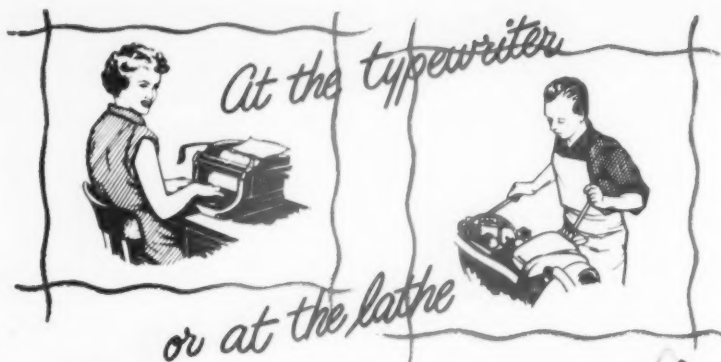
Torit's efficient design lends itself to compact setups that fit into present or future production layouts. Sturdy construction keeps down maintenance costs and, as above, the same switch starts machine and dust collector.

Torit Dust Collectors can be installed on a slim budget. They trim operating costs, and are effective in ridding your plant of dust hazards. For details write:

TORIT MANUFACTURING CO.
291 Walnut Street St. Paul 2, Minn.

see our catalog in
**MACHINE
TOOL
CATALOGS**
or write for copy

**Over 20,000
TORIT DUST COLLECTORS
Now in Operation**



... all appreciate cool water

No matter where they work—in plant or office—you can save steps, reduce fatigue, keep production at the peak, with a dependable supply of cool water. Halsey Taylor fountains or coolers at strategic plant locations provide a welcome solution. Write for latest literature.

Halsey Taylor

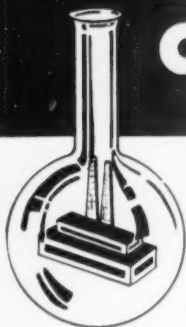


COOLERS

THE HALSEY W. TAYLOR CO., WARREN, OHIO



INDIVIDUAL CUTTING OIL SANITATION



for your plant!

Here's how to prevent costly coolant spoilage and eliminate foul odors: Ask your DOLGE service man to take samples of your coolant for free bacteriological and chemical analysis. A complete laboratory report will show the correct coolant handling method for your particular operation.

Only if tests warrant it will a DOLGE STERIDOL GERMICIDE be recommended—a "tailor-made" preparation to meet your exact needs. Used as directed it will not irritate the skin or corrode metals. The cost?—Far less than a cent per gallon of coolants.

Write for Booklet "Cutting Oil Sanitation."

STERIDOL

FOR FREE
SANITARY SURVEY
of your premises
consult your
DOLGE SERVICE MAN

Dependable
DOLGE
WESTPORT, CONNECTICUT

Washrooms and Lockers

—From page 65

Toilets should be not more than 200 feet from any work place; preferably less than 150 feet.

Facilities for men and women should be plainly marked.

Urinals should be placed throughout the plant in convenient locations to avoid loss of time. One urinal for each 40 men is usually sufficient. Automatic flush valves use more water but are more effective in maintaining cleanliness since many persons seem reluctant to touch hand-operated valves.

Floors of toilet rooms should be of impervious materials, smooth and free from cracks. Tile and concrete are satisfactory. Floor drains permit frequent flushing.

If possible, toilet rooms should have outside windows for light and ventilation. State or municipal regulations usually contain provisions for ventilation.

Switches for lights, electric driers or other equipment should be located so they cannot be operated by a person in contact with piping or other grounded conductor. In pull-chain fixtures the chain should be interrupted by an insulating link close to the fixture.

In plants where eating rooms are close to toilet rooms, covered receptacles for disposal of waste food should be provided in the lunchrooms. Eating lunches in the toilet room should not be permitted.

Cuspidors should be provided where needed and cleaned at least daily. The disposable type requires less handling.

Lockers

A well-equipped locker room is an aid to orderly habits and often to health.

Exposure to toxic substances calls for extra precautions to prevent dangerous materials being carried away on clothing. Separate lockers prevent contact between street and work clothes. They should preferably be in separate rooms with shower stalls between them.

In such plants supervised washup periods and shower baths are important safeguards.

Sloping tops prevent their use for storage, a practice which sometimes demands constant supervision. Dust is conspicuous and easier to remove than with flat-topped lockers.

Built-in lockers extending to the ceiling avoid dust-catching surfaces.

Lockers should be at least four inches off the floor to permit flushing the floor without wetting the contents of the lockers.

Forced ventilation supplied through perforations in the bottom of the lockers or through louvers in the doors is helpful in removing odors. If the work is heavy or wet, circulation or heated air through the lockers is desirable.

—To page 82

Food Service

IN-PLANT FEEDING has become firmly established in industry. While plant cafeterias and canteens have been in operation for many years in the larger companies, more and more smaller concerns have been providing facilities for food service on a somewhat smaller scale.

Originally planned to provide a fairly substantial meal in the middle of the shift, industrial food service now includes the morning and afternoon "coffee breaks," which are helpful in avoiding fatigue.

Two important developments have aided in the extension of food service to smaller concerns. Vending machines now dispense almost anything that can be packaged, including hot drinks, and sanitary disposable paper utensils eliminate dishwashing and breakage, and maintaining a staff of employees.

Types of Service

Food services for industry are grouped generally in four classes:

1. Cafeterias that prepare and serve a variety of hot foods.
2. Canteens or lunchrooms where wrapped sandwiches and other packaged foods and hot and cold beverages are dispensed. A limited menu of hot foods may be served.
3. Mobile canteens that dispense foods through the plant.
4. Box lunch services.

Management. Food service may be operated by the company or by an industrial caterer. In some plants the service is under direction of the plant safety and health committee. Whether operated by the company or by a concessionaire, constant supervision is desirable to maintain standards of quality and cleanliness.

Vending machines are usually operated by a coin that leaves a small margin of profit. Frequently the profit goes to the employees' welfare or recreation fund.

Location. Convenience for employees and efficiency of supply and operation are points which often decide the location of the lunchroom. In many plants the lunch hour has been shortened to allow employees to leave earlier and quick service is important.

Wholesome and palatable food eaten in clean, pleasant surroundings have both physical and psychological benefits. Lighting and ventilation of the lunchroom should receive careful attention.

In larger plants cafeterias are often used for safety meetings and other gatherings for business or pleasure.

Canteens offer less elaborate menus than cafeterias, but investment in equipment and operating costs are considerably lower.

Where only limited quarters are available for lunchrooms, a schedule of staggered lunch hours for different departments is sometimes arranged.

Workers who bring lunches from home and those who patronize box lunch services should have a clean place to eat. Eating in the work places is permissible when operations do not create any health hazard. Locker rooms may be used if clean and well ventilated.

Sanitation

Strict cleanliness in the kitchen is most important. Patrons who get a glimpse of the kitchen should be reassured by what they see.

All perishable food and beverages should be kept under refrigeration except when being prepared or served. Preemployment and periodic physical examinations for employees are important health measures.

Dishwashing. Clean dishes can be obtained with either hand or machine washing, although lower bacteria counts on utensils are obtained by machine.

Hand dishwashing requires a two- or three-compartment sink, provision for scraping dishes and disposing of scrapings, prerinsing arrangement, adequate water-heating facilities, an effective detergent, trained personnel and capable supervision. Baskets for utensils make it possible to use hotter water than the hands can stand.

Most codes require a bactericidal rinse for dishes after washing. This can be accomplished by immersion in water of at least 170° for at least two minutes. A chlorine solution of 100 parts or more per million is also effective.

Drying with towels, while not expressly prohibited, is not recommended.

Newer types of dishwashing machines

are efficient and easier to keep clean. Most models now have devices to maintain the temperature of recirculated wash and rinse water.

Helpful information for planning and operating food service facilities are often obtainable from local and state health departments and from publications of the U. S. Public Health Service.

See also: *Rodent and Insect Control.*

Vending machines. Conveniently located coin-operated vending machines provide such items as cookies, candy bars, sandwiches and soft drinks. Some machines dispense hamburgers, frankfurters and coffee heated by electronic devices. Machines should incorporate recommended principles of sanitary design.

Beverages are dispensed either in bottles or in paper cups. The latter method avoids the problem of lost and broken bottles.

Paper utensils for both hot and cold foods and drinks are popular for smaller lunchrooms and canteens and for restaurants handling take-out orders. They avoid the health hazard of poor dishwashing and loss through breakage.

Receptacles should be provided for disposal of used utensils.

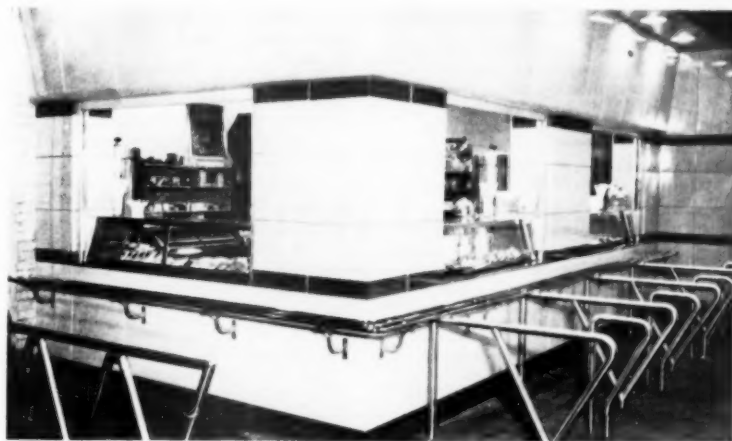
Nutrition

An employee cafeteria has an opportunity to help workers follow recommended diets. It can offer daily specials that will encourage choice of proper food.

Diets recommended by nutrition experts should include the "basic 7" foods:

1. Green and yellow vegetables, raw, cooked, frozen or canned.
2. Oranges, tomatoes, grapefruit, raw cabbage or salad greens.
3. Potatoes and other vegetables and fruit—raw, dried, cooked, frozen or canned.
4. Milk and milk products, fluid, evaporated, dried milk or cheese.
5. Meat, poultry, fish or eggs, or dried beans, peas, nuts, or peanut butter.
6. Bread, flour and cereals, natural whole grain or enriched.
7. Butter or fortified margarine.

—To page 68



Facilities for food service can be incorporated in existing plants. This canteen, equipped to serve 2400 persons daily, is handled in less than 900 square feet. A variety of hot and cold dishes is served in disposable paper utensils. (Factory Stores.)

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- Food Service
Lunchrooms for Employees (B405)—Metropolitan Life Insurance Co.
Food Fights Fatigue, by Rheta Hyatt—N. S. News, Dec. 1951.
Methods of Sanitizing Eating and Drinking Utensils—U. S. Public Health Service.
Energy Restored—N. S. News, July 1951, p. 36.



"These bags under my eyes are caused by the O.P.S., the gray hair by N.P.A., the bald top by employment problems, my ulcers by the steel strike, and you have the gall to worry me about a shortage of towels in the men's room!"

End Towel Expense

(AND MAINTENANCE TOO)

with Modern, Faster-Drying

Sani-Dri
ELECTRIC DRYERS



Provides AUTOMATIC 24-Hr. Service!

New, faster-drying Sani-Dri eliminates ALL towel expense. No more washroom litter, towel-clogged plumbing or empty towel cabinet nuisance. You have fast, efficient drying service — hand dryers for washrooms, hair dryers for showers. Sani-Dri quickly pays for itself—saves up to 95% of washroom maintenance!



Write For Latest Facts!

Illustrated brochure shows all models—tells how new Sani-Dri Electric Dryers give faster drying service and cut washroom overhead. Write today!

Designed, Engineered and Guaranteed by the makers of famous "CHF" Stools and Tables

Distributors in All Principal Cities

The Chicago Hardware Foundry Co.

1033 Commonwealth Ave. North Chicago, Ill.

Rest periods. Principal meals are served in the middle of the working shift but there is growing appreciation of the value of mid-morning and mid-afternoon snacks as a contribution to comfort and efficiency.

Snacks are made possible in a growing number of plants by passes of 10 to 15 minutes to go to the lunchroom. In other plants mobile snack bars are wheeled through working areas, giving each employee a chance for refreshment.

Rodent and Insect Control

RATS, mice and insects are responsible for an annual toll of destruction and spoilage that runs into millions of dollars. In addition, these pests are carriers of many diseases.

Ratproof construction helps to keep rodents out of buildings but control measures should cover a wide area. Rodents must be routed out of burrows and hiding places under lumber, scrap and trash piles.

Materials should be stored on racks 8 inches above the floor with 18 inches between rows. Outdoors, materials should be stored on racks 18 inches above the ground and with at least 18 inches between rows.

Permanent control measures are based on the fact that rodents cannot exist without food, water and shelter. This makes good housekeeping vital, inside buildings and in the yard as well.

Scraps from the kitchen and from employees' lunches should be placed in covered metal containers. Spilled grain should be swept up daily.

Extermination. Temporary control consists of removing the existing rat population by means of traps, gases or poisons. Their natural enemies, such as dogs and ferrets, are not always dependable. This step should precede permanent measures to prevent the rat's migration to other premises.

Calcium cyanide, applied to rat burrows with a foot-pump duster, is an effective poison. It should be used only out of doors. Indoor applications may not provide sufficient moisture to liberate cyanide, thus creating a delayed hazard.

Carbon monoxide from gasoline engine exhaust, chloropicrin and methyl bromide are also effective. Manufacturers of rodent killers provide directions for using them.

Lethal fumigant gases, applied by licensed exterminators, are sometimes effective in controlling infestation.

Red squill has long been a popular and effective rat killer. It acts only as an emetic on other animals but rats cannot vomit and death results.

Warfarin, a more recently introduced rat killer, is also relatively harmless to most other animals and to human beings. It is used in establishments handling food products where more toxic remedies would be highly dangerous.

Barium carbonate, phosphorus or arsenic compounds, thallium sulfate, ANTU, and sodium fluorosilicate (1080)



HAND CLEANERS

Skilled hands are a valuable asset to management, as well as an important responsibility of it. Mione Hand Cleaners can insure that asset by helping to share the responsibility for keeping skilled hands in prime working condition.

WORKERS like the quick-lathering, gentle-scrubbing, easy-rinsing action of Mione. And its very definite skin conditioning value.

MANAGEMENT likes the safe, sanitary, efficient, trouble-free Mione features, plus its economy per pound, low cost per scrub-up, and the basic economy of skilled hands always at top productivity.

YOUR SUPPLIER of washroom needs can give you full particulars about Mione so that you, too, can benefit from the know-how gained from 40 years of making nothing but better and better soap for the hands.

WRITE US FOR THE NAME OF THE MIONE SUPPLIER IN YOUR AREA

Mione

MANUFACTURING COMPANY

Makers of famous hand soaps for 40 years

COLLINGDALE PENNSYLVANIA

are also widely used. The latter two poisons must be used with particular caution since no antidote for them has yet been discovered.

All poisons, except red squill, should be handled with rubber gloves. The user should avoid breathing the dust. Manufacturer's directions should be followed.

Insecticides

In agriculture and in some industries, such as food products, a constant fight must be waged against insects. For farm and garden the traditional poisons such as lead arsenate, Paris green and nicotine sulphate have been supplemented by much safer products such as rotenone, pyrethrum, and DDT. All insecticides, however, should be handled with caution. The user should avoid inhaling dust or spray of any kind and allowing any of it to remain on the skin. For extensive use, protective clothing and gloves and a respirator may be desirable.

Lethal fumigant gases are used for exterminating weevils, moths, beetles and other insects. Carbon disulfide has been used for controlling weevils in grain but it has the serious drawbacks of being highly toxic and highly flammable. Fumigation should be done only by licensed fumigators.

REFERENCES

- Your Enemy, the Rat, by Milton Caroline.
N. S. News, Jan. 1944, p. 44.
Death to Pests, by Emmet Champion.
N. S. News, June 1952, p. 30.

Design and Layout

—From page 9

If ample room is available expansion can be carried on at lower cost and with minimum interruption to production.

The site should be large enough to provide adequate outdoor storage. Where explosives and flammable materials are stored, legal minimum distances must be maintained between storage facilities and other property.

Fire prevention codes also specify minimum distances between buildings, depending on size and types and occupancies of buildings.

Some industries require considerable space for solid waste disposal and storage of coal or other bulky materials.

Decentralization and erection of new plants in outlying locations involves transportation problems, particularly where transit service is inadequate. Employee car pools have become numerous and some companies maintain private bus service, either free or at a low fare.

Cost of operation is affected by proximity of labor as well as raw material and markets, particularly in a tight labor situation.

Topography. Ground may be high or low, level or sloping, dry, swampy, or undermined. All of these factors must be considered in the plants. Normal drainage and the possibility of floods or washouts during heavy rains must also be considered.

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Are You Kidding? How can paper cups cut operating costs?



In three important ways:

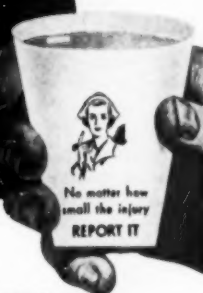
First, safety messages imprinted on your AJAX Cups catch the eye every time an employee gets a drink. And the National Safety Council confirms that safety messages that get read help reduce accidents.

Second, clean, individual AJAX Paper Cups reduce the hazard of transmitted infections, cut down costly absenteeism, improve work-morale and efficiency.

Third, the wedge-shaped AJAX Cup helps maintain good house-keeping, cuts lost time, because it encourages immediate use and disposal — it cannot be set down.

Get these cost-cutting advantages

Put your safety message in his hand
on an **AJAX CUP**



Surveys show that the average worker takes a drink of water at least three or four times a day . . . and that eight out of ten people prefer paper cups. Here is a three-fold opportunity: put your safety message right before your worker's eyes while he's relaxed, receptive, ready to read . . . protect his health, improve his morale . . . and cut your operating costs.



AEROS CUPS (for those who prefer a two-piece flat-bottom cup) are also available imprinted with assorted standard safety messages, or your own messages to order.



United States Envelope Company

Start Saving NOW

UNITED STATES ENVELOPE COMPANY
Springfield 2, Mass.

Please send me information on Safety Message Paper Cups.

Send coupon for full information on imprinted AJAX and AERO Paper Cups and equipment for fountains and tanks.

Name

Company

Address

CS-1

Design and Layout

—From page 69

On ground likely to be flooded, multi-story buildings have advantages. Upper floors provide a safe place to which valuable equipment and products may be moved.

Waste disposal. Waste and sanitary sewer location is determined chiefly by location of buildings, lay of the land, and maintenance needs. Sufficient manholes or other openings for maintenance should be planned.

Sewers should not be located where leakage might contaminate drinking

water sources. In some instances it may be necessary to treat waste material before running it into streams or otherwise disposing of it. In other instances it may be necessary to install special sewerage systems. Federal as well as state and municipal laws may govern waste disposal.

Climate. Industries in colder regions have problems of ice and snow and keeping the plants warm, which may make ventilation complicated and expensive.

In warmer and drier parts of the country some material may be stored outdoors; in others, covered storage may be necessary.

Roof loads of ice and snow and strong winds also affect building design. Where storms of hurricane intensity are frequent, roof anchorage is important. Insurance companies have useful data regarding losses through windstorms and lightning in various sections of the country.

Prevailing winds also affect design and location of smokestacks.

Appearance of the plant—both inside and out—is important. Employee and community relations are influenced by the looks of a factory, and customers often judge the product by the plant. The housekeeping program should include the entire property.

Landscaping should be planned for economical maintenance. With power mowers and sweepers a small force can take care of a large lawn if it is not broken up by shrubbery and flower beds.

Decorative floodlighting has been employed by companies with distinctive buildings and well-kept grounds.

Protective lighting safeguards life and property, particularly in times of emergency. Fences high enough and strong enough to deter trespassers are also important in plant protection.

Entering and leaving the plant. Separate entrances and exits should be provided for pedestrians, vehicular traffic and railroad traffic. Entrance and exit gates should be not less than 35 feet from property line structures which might obscure vision. Gates for vehicular traffic should be arranged so that drivers will have a clear view of cross traffic when leaving the premises.

Passenger loading and unloading facilities should be arranged to avoid traffic hazards and reduce the physical effort required to reach the plant. If the plant is on a main highway, space should be provided where buses can at least pull off to the side for loading and unloading.

Where highway traffic is heavy and a large number of employees must be handled, an underpass or overpass will avoid congestion and delay in getting to and from the plant.

Some companies bring buses right into the plant. The buses are driven down a ramp to a central location. From there employees reach their jobs through passages below the main production floor.

Parking. The parking lot is an indispensable part of today's plant. It should receive consideration in all plans. If it is necessary to cross a busy thoroughfare to reach it, an underpass or bridge may be needed. Separate entrance and exit facilities should be provided.

Guides and marking aid in proper use of the parking area.

Building Trends

High construction costs are stimulating the search for economical materials and methods. Newer building materials, which meet severe performance tests, are sometimes barred by local building codes. Work on standard-



*Why not give
the man
what he wants?*

• There is more to this cartoon than jest. Trying to take a bath in a Bradley Wash Fountain is a bit difficult—but not so with Bradley Multi-Stall Showers.

They are made in three- and five-stall compact units served from the central column. They cut piping connections, one supply for each the hot and cold water and one drain for all five or three stalls.

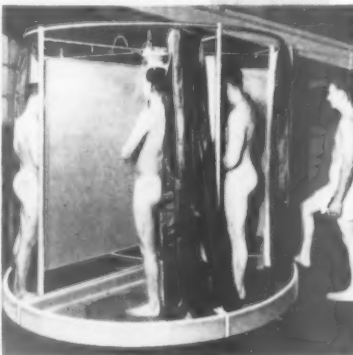
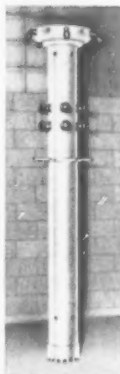
Bradleys are shipped partially assembled for quick installation. Write for Catalog 5204 and full details.

BRADLEY WASHFOUNTAIN CO.

2237 W. Michigan Street,
Milwaukee 1, Wisconsin

BRADLEY
multi-stall showers

Distributed Through Plumbing Wholesalers



5-Stall Bradley Multi-Stall Shower. Stall partitions can be omitted if desired as shown above.

ization of building codes is being conducted by the American Standards Association and other organizations.

One-story plants are preferred in many locations where land values are not excessive and there is plenty of room for expansion. Advantages of one-story construction are:

1. Lower construction costs.
2. Freedom from stairs and elevators.
3. Ease in routing and handling heavy and bulky equipment.
4. Better lighting and ventilation.
5. Ease in isolating hazards.
6. More efficient handling of materials.
7. Ease of supervision.
8. Lower operating and maintenance costs.
9. Better possibilities for landscaping—an asset where the plant is in a conspicuous position near a main highway or an airport.

Roofs. Keeping the roof flat, or with few projections, reduces construction costs. Monitor and sawtooth constructions are becoming less popular although they are effective in admitting natural light to the center of the building. With modern light sources simulating natural light, daylight has become less important.

Materials Handling

General facilities for moving materials in and out of the plant are railroads, highways, water and air. In a few cases all types may be used but more than two are seldom needed.

Loading docks should be planned with consideration for traffic outside and within the plant. Railroad sidings and roadways within the plant add some of the problems of railroading and highway traffic to manufacturing operations.

Transportation with material-handling equipment within the plant includes plant railways (standard and narrow gauge), motor vehicles, power trucks and tractors, hand trucks, cranes, conveyors and elevators.

Studies of the flow of materials through the plant, from the time they are received until they are shipped out as finished products, will often reveal ways to eliminate unnecessary handling as well as hazards. Adequate clear-

ances between vehicles and fixed structures must be provided. This is particularly important in laying out plant railways and driveways.

Machine Layout

Machines should be located so that each operator will have enough space to handle the material without interference from other workmen or from machines. It should not be necessary to stand in or near aisles where he will be menaced by traffic or interfere with it.

Movement of both persons and materials should fit smoothly into the general scheme of traffic.

In continuous line operation, where machines are frequently served by conveyors, little or no intermediate storage space for materials is necessary. In other types of operation added space for storage of raw and finished materials is essential.

Work and storage space. Space for the full needs of equipment and operators and for the movement of storage of materials should be provided.

Insufficient headroom is often a hazard. "Temporary" installations of pipe lines, equipment supports, overhead conveyors and other installations that might cause head bumps can often



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NOW in one labor-saving operation your maintenance men can keep your entire building clean and sanitary. Regular cleaning with Korex reduces the loss of man-hours due to illness and infection. Rooms and equipment are kept sanitary so that there's less chance of colds, flu, etc., being passed around. Investigate the use of Korex for general purpose cleaning now.

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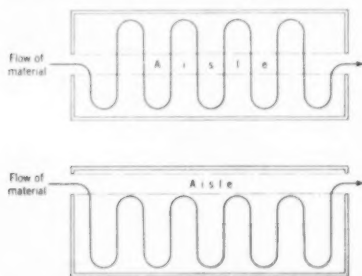
KOREX germicidal cleaner

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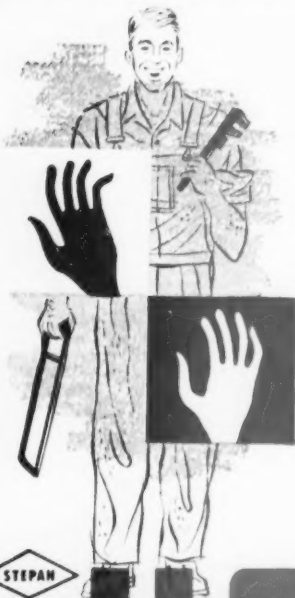


Top: Conventional layout with aisle running through middle. Flow of material zig-zags back and forth across aisle in moving from machine to machine. Lower sketch shows same manufacturing area with aisle at side. This permits full use of manufacturing space without having material criss-cross aisle and exposed to traffic hazards. (Gaudreau, Rimback and Associates.)

IMPROVE EFFICIENCY

Protect your workers

IMPROVE PRODUCTION



A specially formulated, sulfonated oil, bland skin cleanser . . . amazingly effective in removing oils, greases, and other industrial grime. Lotion-like effect actually protects the skin . . . leaving it clean, smooth, and supple.

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New mild synthetic skin detergent with excellent foaming properties. Leaves no disagreeable soapy odor on the skin.

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be avoided. Elevation drawings should be studied to determine the exact location of equipment that might cause trouble.

A vertical clearance of at least 7 feet should be provided, especially over aisles, passageways and stairways. Where this is not practicable, overhead obstructions should be marked by contrasting paint or padded to reduce possibility of injury.

Storage space must be adequate to avoid confusion, bad housekeeping, fire hazards, overloaded floors, and damage to stock.

At unloading platforms ample space is needed for handling and storage of incoming materials.

Supplies, tools, safety equipment, small parts, and equipment not used frequently are often neglected in allotting storage space. This makes maintenance difficult, particularly with such items as personal protective equipment, portable ladders, and hoisting equipment.

Hazardous materials. Flammable, toxic or corrosive materials require special precautions in storage. These include solvents, paints, oils, explosives, compressed gas containers, acids and alkalis. Storage of such materials is covered by codes.

Safe access to all parts of the plant should be provided. Stairways, rather than portable or fixed ladders, should be used wherever possible.

Stairs for general use should be convenient to the areas served. They should be equipped with standard handrails and there should be no obstructions at top or bottom.

In-plant traffic. Planning for the movement of power trucks and tractors, hand trucks and tractors in and



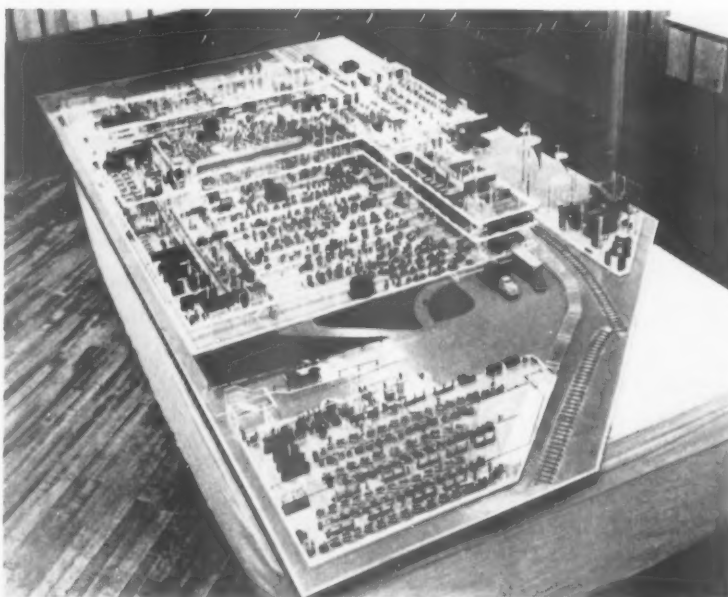
This portable automatic emergency lighting unit provides instant light when regular power fails. Unit is powered by a built-in storage battery maintained by a trickle charger. (General Scientific Equipment Co.)

about buildings requires provision for adequate clearance in aisles, corridors, passageways, and at corners and curves.

Aisleways should be wide enough to permit trucks to pass one another without crowding and without endangering persons working at machines.

Sufficient width should be maintained for free movement of fire apparatus. For one-way traffic, aisles should be not less than two feet wider than the widest vehicle loaded. For two-way traffic, aisles should be not less than three feet wider than twice the width of the widest vehicle loaded.

Clearance must also be provided for overhead cranes and conveyors. At least 24 inches of clearance should be allowed the highest points of cranes and overhead trestles and other overhead fixtures. Also, 24-inch clearance



A plant on a table top. Each department is laid out with scale models of machines. Highways and railroad sidings complete the picture. (Visual Planning Equipment Co., Inc.)



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This man is not drunk . . .
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Recommended by Safety Engineers and Industrial Hygienists.

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* See July 1952 issue of *Industrial Hygiene and Occupational Medicines*

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Write in for our Technical Bulletin
"How To Clean Electric Motors."

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should be allowed between any part of the crane and wall, column or other stationary structure.

Cross aisles should be avoided at tops and bottoms of ramps and inclines. If possible, aisle and ramp should be in a straight line.

Pedestrian traffic. Aisles should be proportionately wider to accommodate rush traffic flow to such points as time clocks, lunchrooms and exit gates. Some companies provide main aisles up to 20 feet wide and cross aisles not less than 8 feet wide.

Where foot traffic parallels railways or other fixed-track carriers, adequate clearance should be provided to allow

the aisle edge to be marked by a distinctive line on the floor. Aisles should always be clearly marked by painted lines or otherwise.

Gates, warning signals or signs, and barricades should be provided. Where volume of traffic is heavy, underpasses and overpasses for both vehicular and pedestrian traffic should be considered.

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Carries two full quarts, sufficient for more than 500 hand washings.

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Skin Infections

SKIN DISEASES are the most common occupational ailments. It has been estimated that they are responsible for as much as 60 per cent of all compensation claims for occupational diseases.

No occupation seems to be exempt and even many normally harmless substances can irritate some skins.

There are two general types of industrial skin affections: (1) Primary irritant dermatitis; (2) Sensitization dermatitis.

Primary irritation dermatitis. Practically all persons suffer skin irritation from acids, alkalis, irritant gases and vapors, and physical agents, such as heat, cold and friction. Brief contact with a primary irritant in high concentration or prolonged exposure to a lower concentration results in skin inflammation. Allergy is not a factor in these conditions.

Sensitization dermatitis is the result of skin sensitivity to a given substance. This form requires a definite period of

CUTTING OILS AND COMPOUNDS Skin Troubles

You may be troubled with rash, pimples, or boils if you permit your skin to become plugged with dirt and oil.

1. When quitting work at noon and at night, scrub your hands and arms thoroughly with soap, warm water, and a soft brush.
2. After each washing, rub lanolin or petroleum jelly or other ointment on your skin to prevent chapping.
3. Keep a soft brush and soft towel handy for your own use.
4. Do not wipe your hands with waste; metal particles on your skin or in the waste may scratch you.
5. Have your work clothes laundered at least once a week.
6. Never spit in the oil pans or reservoirs or otherwise contaminate the cutting fluid.
7. Get first aid promptly for all cuts and scratches.
8. Report to your foreman at the first sign of skin irritation.

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National Safety Council PRINTED IN U.S.A.

RIGHT IN YOUR OWN BACK YARD...

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New floors cost \$300,000,000 a year!

TYPE OF FLOOR	INSTALLED COST* OF 50,000 SQ. FT.
Asphalt Tile	\$15,000
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*Based on reports of reliable flooring contractors in urban areas.

How much will it cost you to replace worn-out floors today? The chart gives you some idea.

But, your floors *don't* have to wear out. They can be protected almost indefinitely.

How? With West's simple, proven FLOOR PRESERVATION PLAN. (1) *Cleaning* — remove all dirt without harming floors (2) *Sealing* — fill the pores. Provide a protective coating (3) *Maintaining* — put on a tough, anti-slip floor wax.

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the first and only
proven, effective and non-irritating
antiseptic chemical for soaps

Protect your workers and help reduce absenteeism by specifying for your washroom dispensers, soap containing G-11.

Secondary infection is often associated with occupational dermatitis, resulting from cutting oils, solvents, minor cuts, etc.

The antiseptic properties of G-11 soaps and de-

tergents will maintain a low bacteria count on the skin of the hands and forearms, and will help combat this health problem.

Proved by years of safe, successful use, these soaps achieve remarkable reductions in bacteria count of the skin. They are especially essential for food handlers in hospitals, plants, and other institutions.

A brochure and bibliography will be sent on request.

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AT LAST—effective control of "Athlete's Foot" where it usually starts—in your shower room!

SANI-MIST solution—used in the patented SANI-MISTER Spray Dispenser—relieves discomfort and helps prevent the spread of this infectious disease—helps avert costly layoffs.

Public health authorities call the SANI-MIST method one of the most sanitary treatments ever devised for shower room protection. Each application is fresh, full-strength, never contaminated. A three-second treatment covers user's feet with a refreshing, soothing spray. Simple—safe—and sure!

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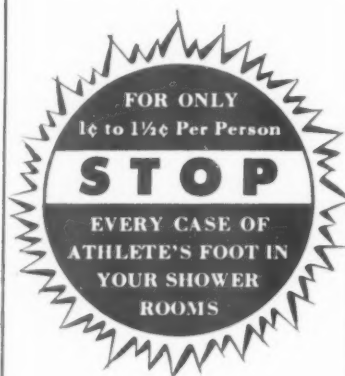
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Please send me complete details on how SANI-MIST can safely and economically fight "Athlete's Foot" in our shower room.

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THAT'S ALL!

Try THE NEW NON-TOXIC
FOOT LOTION FOAM-X
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Why Skin-toughening PREVENTS ATHLETE'S FOOT

SHOES CAUSE ATHLETE'S FOOT



The modern shoe is the main cause of athlete's foot, says the U. S. Public Health Service (Bulletin R-674). Shoes soften and devitalize the skin. This soft, dead skin inside a warm dark shoe is ideal soil for the growth of athlete's foot fungus.

FUNGUS SPORES ARE EVERYWHERE

The fungus spores, or seeds, are as common as dust. Some of them are on the skin almost all the time. And when the skin's resistance is low, they grow and multiply. The result is athlete's foot.

The chief danger of athlete's foot is that it causes cracks in the skin. More dangerous germs can then enter the blood stream. Serious secondary infections may result.

DISINFECTING THE FEET WON'T HELP



Attempts to disinfect bathers' feet are "futile, illogical, and potentially harmful," according to skin specialists.* You can't kill all the fungus spores, and you may weaken the skin still more by trying to kill them.

WHAT IS THE ANSWER?

Skin specialists say that the best chance of preventing athlete's foot is to build up the skin's resistance to fungus attack.* A strong healthy skin is your best defense against the ever-present fungus spores.

That is the basic principle of Onox skin-toughening.

*Archives of Dermatology & Syphilology, April, 1942.

WHAT IS ŌNOX?

ŌNOX is an odorless, non-poisonous solution of five beneficial mineral salts. Both laboratory† and controlled tests show that Onox toughens the skin and makes it resistant to fungus attack.

†Pease Laboratories, Inc., New York, N. Y.

IT'S EASY TO USE

Onox is used in a soft sponge rubber mat. One mat serves 50 bathers on a shift. Stepping on the sponge (after showering) forces Onox up between the toes, where it is needed. A good percentage of the salts stay on the skin, even after drying with a towel.

MEN LIKE TO USE THE MATS

The sponge mat is pleasant to step on. It is neat and attractive—no splash, no mess. And Onox is very refreshing to tired, aching feet.

FREE BULLETINS AND LEAFLETS

Free bulletins are sent you each month. These, along with easy-to-read leaflets, explain the need for skin-toughening. Customers report excellent results with this free service material.



Ōnox skin-toughening is used by over 70% of the largest manufacturers in the U.S.A.

ODORLESS
EASY TO
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NOTHING
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**COST IS SMALL—
1¢ PER MAN PER WEEK**

TRIAL OFFER... We will ship any amount of Onox and footmats for 60 days' use. If you and your men are not more than satisfied with results, you owe us nothing. For further information, write, or send coupon.

Ōnox, Inc., 119 Second St., San Francisco 5, Calif.
(Warehouses: Brooklyn, Cleveland, New Orleans, Los Angeles)

Send free catalog—no obligation—about Onox.

☐ We have showers. ☐ We plan to have showers.

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Avoid Costly WORK SLOWDOWNS!

NOW is the time to check your hot weather supplies. Be sure your workers are protected against heat fatigue by ordering salt tablets and dispensers from StaSafe today.

STASAFE ALL-METAL DISPENSERS

Simple—Sturdy—Sanitary! Made of a corrosive resistant alloy, these dispensers carry a five year guarantee against mechanical failure. Easy to operate, they are equipped with lock and key, wall bracket and inspection window. StaSafe Junior holds 1,500 tablets, Midget holds 600.



JUNIOR



MIDGET

FAIRWAY PLASTIC DISPENSERS

Made of molded plastic, these Fairway dispensers are moisture, dust and corrosion resistant. They protect your tablet supply from contamination. All Fairway plastic dispensers have a visible tablet discharge control, are furnished with lock top, key, mounting bracket and screws. The Junior holds 1,500 tablets, the Midget 350.



MIDGET



JUNIOR

FAIRWAY CRYSTAL DISPENSERS

Designed to satisfy the demand for an attractive, sanitary, low-cost dispenser—one that needs no servicing or re-filling! Each unit is filled with enteric coated tablets and sealed at the factory. When the tablets are gone, just throw the dispenser away. The Crystal holds 500 tablets, the Crystal-M 1,000.



CRYSTAL



CRYSTAL-M

FAIRWAY TABLETS

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sensitization. During this period the offending substance causes no response unless there is contact with concentrations high enough to cause primary irritation. Once sensitization develops, even small amounts of the material may cause symptoms.

Some substances can produce both types of dermatitis. Among them are organic solvents, formaldehyde and chromic acid.

Oil Dermatitis

Cutting oils and compounds are frequently involved where cutting and turning of metals is performed. The condition starts with irritation of the skin by continuous contact with the oil, forming comedones or blackheads. These comedones later become infected to form oil pimples or boils.

Dirty workers working in dirty oil form a combination that often results in serious conditions. Some types of skin are more susceptible than others, but anyone will develop the condition with sufficient exposure.

If other precautions are taken, use of protective creams will help, primarily by making it easier to cleanse the skin.

Keeping machines and the area around them free from loose oil is the basis of any program for the control of oil dermatitis.

To prevent excessive deterioration of oil it should be replaced and the machine thoroughly cleaned after each 120 hours of use, or oftener. The oil may be reclaimed or replaced, depending on which is cheaper.

If reclaimed, it may be sterilized by heat during the process. Great caution should be used in adding germicides to oil. Most of them are irritating to the skin if used in excessive amounts.

Oil dermatitis occurs most often on the fronts of the thighs and the back of the neck, where the clothing rubs, also on forearms and wrists where direct contamination is heaviest. Men working in the area must therefore be persuaded to keep clean and not wear oil-soaked clothing.

Men should be encouraged to bathe daily at the end of the shift. A shower with warm water, mild soap or detergent, and a soft brush is helpful in the control of this type of dermatitis. It is also effective for other types of primary irritation dermatitis.

General precautions. The primary objective is to prevent contact with the irritant or reduce it as much as possible. Use of enclosure and mechanical methods of handling will reduce skin contacts.

Personal protective equipment, such as gloves, aprons, and face shields, and protective creams are a second line of defense. Careful housekeeping around the process is also essential.

Personal cleanliness, which shortens the contact of the material with the skin, is at least as important as personal protective equipment.

Attempts to determine which individuals are especially sensitive to contact with these materials, by patch tests or otherwise, are of doubtful value.

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HEAVY DUTY**



SKIN CLEANSER

**PAX-LANO-SAV
HEAVY DUTY**

*America's
Finest
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Skin Cleanser*



WASHES WORKERS

- cleaner
- faster
- safer

...at less cost per
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"bargain" brands



PAX-LANO-SAV Heavy Duty carries the Official Seal of Acceptance of the Committee on Cosmetics of the American Medical Association.



The PAX trademark symbolizes a long-standing tradition of superior quality maintained through a quarter-century of continuous research and development.

ACCEPTED— By the Committee on Cosmetics of the American Medical Association.
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LET US PROVE PAX IN YOUR WASHROOM!

Ask your Purchasing Agent to write today on your letterhead for a FREE half-pound sample. Then, at your request, our representative will gladly conduct a competitive test between PAX-LANO-SAV Heavy Duty and your present brand—let you and your workers be the judge.

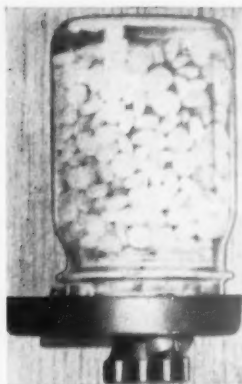
OTHER PAX PRODUCTS: A complete line of Pax Granulated Skin Cleansers, each the finest in its price range. Also: PAX-SOLV Waterless Skin Cleanser—PAX Hecto Ink Skin Cleansing Cream—PAX General Purpose Cleansers—PAX Dishwashing Compounds—PAX Degreasers—PAX "Soap Saver" Dispensers.

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ACE SALT TABLET DISPENSER

NEW—DIFFERENT
ECONOMICAL
SANITARY 95% GLASS AND PLASTIC
STRONG—SIMPLE
FOOL-PROOF

The last word in salt tablet dispensers. Holds 750 10-grain tablets. Price \$2.50 each, Postpaid.

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NEW SBS WATERLESS WASHSTATION*

"brings the washroom
to the worker"*

for only \$52.50 per unit

(F.O.B. Saginaw, Mich. Towel dispensers not included.)

SBS-30 Waterless Skin Cleanser and new type dispenser make possible portable wash-up units that save hundreds of man-hours... thousands of dollars!

SBS Waterless Washstation is a complete hand-washing unit that requires no plumbing because it uses SBS-30, remarkable Waterless Skin Cleanser that removes nearly every soil except lacquer.

- locates close to work areas in factories, warehouses and shops or near outdoor operations.
- saves up to \$720 per unit annually by reducing time workers spend off the job washing up.
- helps keep workers hands clean for better health and greater efficiency in industry.
- reduces crowding in washrooms at lunch time and new shift time.
- eliminates use of harmful and irritating solvents.

SBS Waterless Washstation is constructed of heavy steel and finished in grey-green enamel. Turret top holds SBS-30 dispenser and two of your own paper towel containers. Handy locking storage space in turret top removable cloth bag for used towels in base.

Polished aluminum dispenser has two-way feed adjustment that provides 1000 to 1500 washes before refilling. Easy to refill. One turn of the handle dispenses right amount of cleanser—no leakage, no soap waste. SBS-30 Cleanser is easy to use—workers just rub it on, then wipe it off along with all dirt and grease. It leaves the hands clean, smooth and soothed.

Fill out and mail the coupon below for complete information about SBS Waterless Washstations and our 30-day no-risk money back trial offer.

*Trademark

SUGAR BEET PRODUCTS CO., SAGINAW, MICHIGAN
Chemical By-Products Division



SUGAR BEET PRODUCTS CO., Dept. 2D, SAGINAW, MICHIGAN
Sirs: Please send me full information about the new SBS Waterless Washstation and your 30-day no-risk money back trial offer.

NAME _____
TITLE _____
COMPANY _____
STREET ADDRESS _____
CITY _____ ZONE _____ STATE _____

86

Ventilation

—From page 58

workroom without further filtering. Cyclones are relatively inefficient for removing small particles.

Dynamic separators combine fan and collector in one unit. In form this type of separator is somewhat like a cyclone, but the centrifugal separating action is performed by the revolving blades. It is more efficient than the cyclone.

In some types water spray is introduced with the dust at the inlet. Wet collection increases efficiency for fine dusts.

Wet collectors use several devices for obtaining contact of water with the exhausted air so that dust particles form a sludge. One type consists of sprays or water curtains through which dust-laden air is drawn. These are efficient collectors for many types of dust. An important application is in the prevention of dust explosions from aluminum or magnesium grinding.

Supersonic flocculation. Suspended dust is passed through a field of supersonic vibrations, inaudible to the human ear, generated by a high-frequency siren. Vibration flocculates the fine particles, and the aggregates are then collected by cyclones or other measures for collecting relatively coarse particles.

General Safety Measures

Personal protective equipment is needed where exposure is occasional or where complete protection is not practicable. Removal of the hazard at its source should remain the objective.

Sanitation and housekeeping must receive constant attention. Otherwise equipment will lose its effectiveness and unhygienic conditions develop.

Supervision and training of employees, particularly in hazardous operations, is important. Workers exposed to toxic substances should receive frequent physical examinations.

Air Conditioning for Crane Cabs

Operators of overhead traveling cranes are often subject to extreme heat and humidity, as well as to gases, vapors and dusts from operations below.

To improve conditions, cab coolers have been designed. These coolers are self-contained units which need only an electrical condition. They supply clean air, cooled and dehumidified to the cab.

Locomotive cranes, which often must operate in excessively hot locations, can be provided with similar equipment.

These units can also be used to heat the cab in cold weather.

AIHA Creates Standards Committee

The Board of Directors of the American Industrial Hygiene Association has given standing committee status to the newly created Standards Committee to

foster continuity in its work. The Standards Committee was established to study the relationship of AIHA to other associations, particularly to the American Standards Association, and to promote the professional and technical interests of industrial hygiene in such relationships.

It is expected that AIHA will now take a more active part in the work of ASA and in the consideration of standards for industrial hygiene. The committee is under the chairmanship of Carlton E. Brown, Sc.D., and members are Edgar C. Barnes; Melvin W. First; Lloyd N. Hazleton, Ph.D.; William E. McCormick; Arthur C. Stern, and Bernard D. Tebbens, Sc.D.

At the same time the Board of Directors gave Standing Committee status to the Development Committee, the Noise Committee, and a new Legislative Committee to be appointed.

The Development Committee consists of Warren A. Cook, chairman, Howard N. Schulz, William T. McCormick, Herbert T. Walworth, and Herbert J. Weber.

The Noise Committee consists of Charles R. Williams, Chairman, Allen D. Brandt, Lester V. Cralley, Edward G. Meiter, Walter F. Scholtz and James H. Sterner, M.D.

The Legislative Committee is to follow proposed Federal and State Legislation as it may affect industrial hygiene and advise the Board of Directors on the subject.

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FAIRWAY SALT TABLETS

Don't let sizzling, summer temperatures hit your profits! Protect your workers from its fatiguing effects by furnishing Fairway Salt Tablets.

Designed to prevent heat sickness by replacing the salt lost through excessive perspiration, Fairway Salt Tablets are sanitary and economical.

To prevent nausea, use Fairway enteric coated tablets—either pure salt or combination salt and dextrose.

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won't do
the job—
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Stations
will!



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SAVE EYES!



Leading industrial doctors advise immediate washing with plenty of running water as the best first aid treatment for any chemical in the eyes. Records prove that washing with water for ten minutes or more, close to the accident, is necessary to reduce or eliminate eye damage.

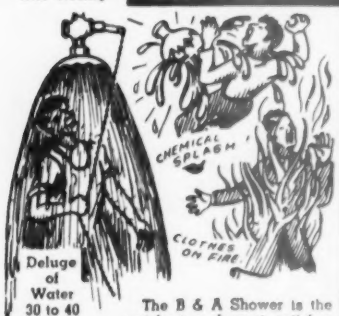
Forehead operation leaves hands free to open eyelids so water can be directed wherever chemicals might be lodged. Sanitary white baked enamel bowl is resistant to most fumes.

Over 500 industrial plant installations have been made to date.

Write For Details.

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Chain Operated
Quick Action
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NEW EMERGENCY SHOWER



The B & A Shower is the quickest and most satisfactory way to saturate a worker with gallons of water the instant an accident occurs, to prevent a disfiguring burn—even a fatality.

Special shower head, no holes to clog—can be used where unfiltered water prevails.

Write For Details

GLASS SLIVERS AND CHEMICAL IN EYES!

DISFIGURING FACIAL CUTS AND BURNS!

CUTS AND CHEMICAL BURNS ON ARMS AND BODY

THIS HAPPENS WHEN UNPROTECTED GLASS BOTTLES ARE DUMPED



5 PINT
1 GALLON
5 GALLON

NEW LOW COST B & A SAF-T-BAGS

are widely used for the safe handling of glass bottles containing harmful chemicals; also the storage and recovery of expensive serums, biologicals, and other costly products.

Painful cuts, disfiguring burns, loss of eyesight, or even a fatality, do result from corrosive liquid splash and flying glass when unprotected bottles shatter.

Write For Details.

BENSON & ASSOCIATES, INC.

P.O. Box 7542, Dept. N.S., Chicago 80, Ill.

Demonstrate Value of Safety Glasses

A "pistol" which shoots steel "bullets" is helping protect the eyesight of employees of the General Electric Company.

Mounted at one end of the "eyesaver" unit, which is about the size and shape of an ordinary shoe box, the gun fires a steel ball at a pair of eyeglass lenses at the other end of the box.

The person demonstrating the device shoots the gun at each of the lenses. The steel ball easily shatters the lens of the ordinary glass, but bounces harmlessly off the safety glass.

Its greatest value is the dramatic manner in which it shows the sharp splinters and glass dust which cause the most serious injuries when an ordinary lens is broken.

Demonstrated to men in the huge turbine factory, the pinball device forcefully demonstrates the value of safety glasses.

Employees of the G.E. plant who go into manufacturing areas are offered safety glasses for their protection. Corrective lenses made to their prescription are furnished wherever needed. All safety glasses are provided without charge.

The company supplied employees here with over 16,000 pairs of glasses during the past year.

Visitors to the factory are provided

with safety glasses during their tour.

The "eyesaver" device is designed to convince employees who want to look to luck that it's much wiser to protect their eyes with safety glasses.

Safety men say that since the device has been demonstrated, there has been a rush of safety glass business from previously reluctant employees.

Lockers

—From page 66

Baskets and hangers on elevating chains are used instead of lockers in some industries, such as mines and foundries. Damp work clothing can be dried out between shifts and the drying is often hastened by steam coils at the ceiling. Such an arrangement conserves floor space.

Rest Rooms

A rest room should be provided in all establishments where 10 or more women are employed. Where there are fewer women and a separate room is not available, suitable space, properly screened, should be provided.

For 10 women, minimum space is 60 square feet, with at least 2 square feet for each additional woman employee. For less than 100 women at least one bed or couch should be provided; for 100 or 250 workers, 2 beds, and 1 bed for each additional 250 workers.



HAWS
EYE-WASH FOUNTAINS

When accidents threaten permanent injury to the eye, HAWS Eye-Wash Fountains, installed for instant, on-the-job, first-aid in your plant may be the means of saving the sight. They provide immediate relief, flushing away chemicals or other injurious materials before irreparable damage occurs. Also available with instantaneous drench-shower for decontaminating clothing and entire body.

It costs only a few cents per worker for this priceless protection. Don't delay...investigate and install HAWS Industrial Eye-Wash Fountains NOW!

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HAWS DRINKING FAUCET CO.
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SECTION 4

PERSONAL PROTECTION

Eye Conservation

INDUSTRIAL operations expose eyes to a variety of hazards. Flying objects, splashes of corrosive liquids and molten metals, dusts, and harmful rays, are among the causes of eye injury.

Injuries to the eyes result in a high degree of disability and often disfigurement. Cost per injury from the standpoint of medical treatment and compensation is high, and total cost to employers and employees is heavy.

Some eye hazards can be controlled at the source by means of enclosed processes and shields on equipment. Many eye injuries, however, are caused by casual flying particles in occupations considered non-hazardous.

For this reason, some companies have introduced eye protection for all employees and for visitors. Many of these companies have reported substantial savings through eyes saved. Few accident prevention activities have produced such measurable results as eye protection.

Better Vision

A complete program of eye conservation includes both protection against injury and correction of visual defects which reduce efficiency and increase liability to accident.

Visual surveys. For pre-employment examinations and periodic re-examinations there are devices which indicate the visual status of the individual. Manufacturers of this apparatus have



Taking inventory of visual skills. Those showing defective vision are referred to ophthalmologists or optometrists for refraction tests. (Purdue University)

prepared systems which use the data obtained from the tests in determining the fitness of the employee for various occupations.

These tests may be given by trained laymen. Their purpose is to detect visual defects, not to prescribe for them. Those needing corrective lenses are referred to refractionists (ophthalmologists or optometrists) to be fitted with glasses.

In prescribing corrective lenses for safety goggles or for ordinary spectacles, the refractionist should be familiar with the job. It is particularly important to know the distance of the working level from the eye.

Corrective goggles. For visual defects, the wearer may have the correction ground in heat-treated lenses, or cover goggles may be worn over spectacles.

For most cases corrective goggles are preferable for optical reasons as well as convenience. Most prescriptions can be ground in protective glass.

Cover goggles are often preferred where a near-sighted person requires deep minus lenses. These would be excessively thick at the edges and too thin for adequate protection at the center. Cover goggles also have advantages where the correction is complicated and the lenses would be subject to pitting on the job.

Familiar types of cover goggles are the cup type with heat-treated glass lenses and the wide-vision type with plastic lenses.

Types of Protection

General types of protective equipment for eyes and face include:

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1. Goggles (safety glasses)
2. Face shields
3. Welding masks and helmets
4. Acid hoods

These devices are available in many types for practically every occupation. The protective medium may be heat-treated glass, transparent plastic, wire screen, or light-filtering glass.

Heat-treated lenses in spectacle frames, or cup goggles offer basic protection. The nature of the job and its eye hazards determine the specifications.

Spectacle goggles are worn for light or moderately heavy work, such as grinding, machine work and assembling where working positions are not too close.

The frame must be rigid enough to hold the lenses in proper position in front of the eyes. The nose bridge should be adjustable, or goggles should be available in enough sizes to fit various faces.

Side shields of metal or plastic provide protection against light objects flying from the side. They should be used where operations are close together, or where employees work together on the same operation.

Cup goggles are used for heavy grinding, machining, chipping, riveting,



Face shields of transparent plastic give satisfactory protection for many operations. (Rohm & Haas Co.)

work with molten metals, and similar operations.

The cup should be wide enough to protect the eye socket and distribute the impact from any blow over a wide area. The cup should be flame-proof, corrosion resisting, and non-irritating to the skin.

Mask-type goggles, with frames of soft vinyl or rubber, offer protection against splashes of corrosive chemicals and exposure to fine dust. This type is obtainable with lenses of heat-treated or untreated glass or acid-resistant plastic. Some types may be worn over spectacles. The ventilated types are less troubled by fogging.

Dust goggles, leather mask type, for non-corrosive dusts, are made with heat-treated, untreated or filter lenses. Wire screen ventilators around the eye cup provide air circulation.

Miners' goggles of non-corrosive wire screen are used for work underground and in other locations where fogging is a serious problem. The screen is coated a dull black to reduce reflection.

Plastic lenses have qualities of optical glass in light transmission and freedom from distortion. They are light in weight and resist fogging. They are useful for spotwelding, as molten metal does not adhere to plastic as readily as to glass. They withstand considerable impact but are marred or scratched more easily than glass.

Important considerations. Ease of cleaning and sterilization are essential. Most types on the market meet these requirements.

Goggles should be fitted as close to the eyes as possible without touching the eyelashes to give the widest possible angle of vision.

Minimum permissible size for oval lenses is 44.5 mm. in the vertical dimension and 48 mm. in the horizontal. Round lenses should be 50 mm. in diameter.

Lenses should have no appreciable distortion or prism effect.

Strength of heat-treated lenses (resistance to impact) should conform to specifications of the Federal Standard Stock Catalog, the Government's official purchasing guide, Specification GGG-G-G-501B.

Harmful Rays

Glass which filters out harmful ultra-violet and infrared rays is available in many types of goggles, face shields and helmets. These filter lenses are worn for welding and cutting, furnace and boiler observation and other operations where there are high temperatures and excessive glare.

Didymium glass is used for protection against bright yellow glare encountered in glass blowing and similar operations. It is also useful for some precision operations in laboratories.

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TYPES OF EXPOSURE (National Bureau of Standards Handbook H24)	TYPES OF PROTECTION									
	CUP GOGGLES	SPECTACLES	SIDE SHIELDS	PLASTIC EYE SHIELD	PLASTIC FACE SHIELD	WIRE SCREEN SHIELD	FILTER GOGGLES	RUBBER GOGGLES	HOODS	HELMETS
Heavy impact, large particles—Chipping, calking, some riveting operations, sledging in quarries.	X		X							
Moderate impact, protection from dust and small flying particles—Scaling and grinding metals, stone dressing where quartz is not involved, some woodworking operations.		X	X	X	X					
Metal sparks and spatter—Electric spot and butt welding where there is no exposure to excessive energy or excessive glare.			X	X	X					
Splashing metal—babbitting, pouring lead joints for pipes, casting hot metal, dipping in hot metal baths.	X			X	X	X				
Splashing liquids—Handling acids and caustics, dipping in galvanized tanks, some japanning operations.	X				X			X	X	
Reflected light and glare—Long exposure to light reflected from snow, water, roads, etc.; incidental glare from furnaces, working near acetylene welding, etc.	X	X	X				X			
Injurious radiant energy—moderate reduction in visible radiant energy—Oxyacetylene welding and cutting.	X									
Injurious radiant energy—Large reduction of visible radiant energy.										X

Respiratory Protection

RESPIRATORY equipment protects the worker against inhalation of air contaminants. These range from relatively harmless "nuisance" substances to toxic dusts, vapors, mists and gases.

Removal of contaminants at the source and enclosure of processes helps to keep down concentrations of harmful substances in the work-room air. However, leaks and break-downs may occur, and there are operations where exposure is brief or infrequent. For such contingencies, personal protection should be provided.

The worker's air intake may be safeguarded by three principal methods:

1. Mechanical filters to remove dusts and mists.
2. Absorption or chemical reaction to remove gases and vapors.
3. Supplied air.

Types. Four general types of respiratory equipment are:

1. Canister gas masks.
2. Chemical cartridge respirators.
3. Filter respirators.
4. Supplied air equipment (hose masks and air-line respirators).
5. Self-contained apparatus supplying oxygen or air.

Each type of equipment has a definite field of usefulness, as well as limitations. Manufacturers and dealers want to know the type of exposure when equipment is ordered.

Approval. Equipment which meets accepted standards carries the label of the Bureau of Mines. Approval specifies type of exposure as well as design and construction.

Gas Masks

A gas mask consists of a face piece connected by a flexible tube to a canister. Inhaled air is drawn through the canister which cleans it chemically. No one chemical has been found which will remove all contaminants so the canister must be chosen for the exposure.

Canister gas masks with full face piece are for emergency protection in atmospheres immediately dangerous to life. Their effectiveness is limited to 2 per cent by volume. An exception is ammonia for which the limit is 3 per cent.

Identifying colors. Canisters of gas masks are painted as follows:

1. Black—Organic vapors.
2. White—Acid gases.
3. Yellow—Organic vapors and acid gases.
4. Green—Ammonia.
5. Brown—Organic vapors, acid gases and ammonia.
6. Red—Universal; all industrial gases, including carbon monoxide, smoke and fumes.
7. White with green stripes—Hydrocyanic acid gases.
8. White with yellow stripes—Chlorine.
9. Blue—Carbon monoxide.

Cartridge Respirators

Chemical cartridge respirators usually have a half-mask face connected directly to a small container. Chemicals

are similar to those used in gas masks.

Cartridge respirators are used only for non-emergency situations—for atmospheres which are harmful only after prolonged or repeated exposures.

Filter Respirators

Protection against any form of particulate matter can be provided by a mechanical filter respirator of proper design. Major items to be considered are resistance to breathing offered by the filter element, adaptation of face piece to faces of various shapes, and fineness of particles to be filtered out.

ASA Code Z-2 requires that the complete respirator show a resistance not in excess of 50 mm. of water to inhalation at a rate of 85 liters of air per minute. Resistance to exhalation under the same conditions may not exceed 25 mm. Commercial respirators are usually held to considerably lower resistances.

Specified types of filter respirators are approved for protection against inhalation of non-toxic or nuisance dusts. Other types are used for silica and other pneumoconiosis-producing dusts, toxic dusts, vapors and mists.

Mechanical filter respirators are not effective against solvent vapors, injurious gases, or oxygen deficiency.

Atmospheres immediately hazardous to life require air supply from a point beyond the contaminated area. With a hose mask, air is normally supplied by a blower. The wearer can inhale through the hose when the blower is not operating.

Hose lines (with at least a 1-inch connection) are recommended rather

than **air lines** with connection to a compressed air system for most operations. In a case of failure of air supply, it is possible to breathe through a considerable length of hose.

Hose masks are not approved with more than 150 feet of hose or where inhalation resistance exceeds 2.5 inches of water, or the exhalation resistance exceeds 1 inch of water.

Attachments of additional hose should not exceed the total prescribed length and should be approved for use with that type of mask and should have approved couplings.

The hose mask should always be used for work which involves entering tanks or pits where there may be a dangerous concentration of dust, mist, vapor, or gas, or oxygen deficiency.

Harness to pull the hose lines requires inspection prior to use. The minimum requirement is that component parts of harness shall withstand a pull of at least 250 pounds.

Air-Line Respirators

Air-line respirators, connected to compressed air-lines, provide essentially the same protection given by hose masks. They are not intended for atmospheres immediately hazardous to life where the wearer could not escape if failure of the air supply required him to remove the respirator.

This respirator differs from the hose mask mainly in two features: It has a hand-operated, quickly detachable coupling connected to the belt or body harness so that the operator can connect to a compressed air hose, also a flow-limiting device with capacity to permit air flows only between 2 and 20 cubic feet per minute.

A trap and filter installed in the compressed air line ahead of the masks to separate oil, water, scale, or other extraneous matter from the air stream is desirable.

An air-pressure regulator in the line is required if air is supplied at a pressure in excess of 25 pounds per square inch and, in addition, a pressure release valve which will operate if the regulator fails.

Supplied-air respirators are the most desirable for operations requiring continuous use of a respirator. Other types may give adequate protection, but they offer breathing resistance and are consequently more fatiguing.

To obtain clean air, the compressor intake must be kept away from all sources of contamination. The compressor should be well maintained. It must not run too hot, as dangerous amounts of carbon monoxide can be produced by decomposition of lubricating oil.

Abrasive Blasting

Abrasive blasting requires not only an adequate supply of filtered air, but also mechanical protection for the head and neck. This protection can be supplied either by an impregnated cloth

—To page 100



Hose mask with hand-operated blower for men working in tanks. Safety harness and life lines should also be worn in irrespirable atmospheres.

Head Protection

PROTECTIVE HATS are needed on jobs where heads are menaced by falling objects. These hats are widely used in the mining, lumbering, construction, shipbuilding and petroleum industries, and for certain occupations in other industries.

Protective hats are also useful where there is danger of bumping the head against overhead structures.

Resistance to impact is the most important essential for these hats. They must also be fire resistant and impervious to moisture. Where contact with electricity is possible, the material should be non-conductive.

Types. A hat with a brim all the way around provides the most complete protection for the head, face, and back of the neck. For confined spaces where a brim might be in the way, the cap type may offer adequate protection.

Some models have brackets to support welding masks or miners' cap lamps.

Materials. Laminated plastic molded under high pressure is widely used. It is resistant to impact and to effects of water and oil. Dielectric strength is high.

Glass fiber impregnated with resin is a recently introduced material. It has a high strength-weight ratio, high dielectric strength and resistance to moisture.

Hats which glow in the dark, due to a phosphorescent pigment, are obtainable on special order.

Aluminum alloy meets all requirements for resistance to impact and moisture but is low in dielectric strength. Metal hats should not be worn where there is danger of electrical contact.

Weight. Not more than 14½ ounces for the complete hat is specified by Federal Specification No. 367A. The specification also lists several tests which hats must pass. These include moisture, impact and electricity.

The hard outer shell of the hat is supported by a cradle or hammock which keeps the shell away from the head and cushions it against blows.

Cradle and sweatband should be replaceable because of deterioration when exposed to perspiration for long periods. This is also important for sanitary reasons, especially when the hat is worn by more than one person. The shell can be sterilized by any of the common methods.

For cold weather a winter lining may be attached to the hat. This lining is made of water-resistant cloth to protect head, neck and ears.

Where the wearer may be exposed to strong winds on such locations as bridges and oil derricks, a chin strap is useful.

An eyeshield of transparent plastic can be attached to some types of hats.

It is hinged under the peak and lies flat against the peak when not in use.

Colors. With some manufacturers, hats are now available in seven standard colors—white, gray, red, green, blue, brown and black. Other colors are available on special order. Color is permanent because it goes all the way through the material.

Special colors are sometimes ordered, or stock hats painted, to match the color used by the company on vehicles, in advertising, etc. Distinctive colors and designs are also used to designate the wearer's department or trade. This is often done in large plants where certain areas are restricted to a few selected employees.

For Women Workers

Women are seldom employed in occupations where protective hats are required. Their hair, however, provides a problem around moving machinery. Much effort has been expended in designing headwear that provides adequate protection and is reasonably attractive in appearance.

Scalping is likely to occur at points where hair may come in contact with rotating parts, or where enough static is produced by the machine to lift the hair.

Enclosing the machine may be practicable in some operations but women who work around such machinery should wear caps which cover the hair completely. Hair covering is also de-



A helmet of laminated plastic stopped this drift pin which fell more than 30 feet. The blow was cushioned by the cradle lining which was adjusted to allow 1¼ inch clearance between the head and top of the hat.

sirable from the standpoint of cleanliness in many occupations.

Hair covering should be made of fabric sufficiently durable to withstand repeated laundering. Design should be simple so that pressing may be done by machine.

Flame resistant material should be used if worn near spark or flame.

Caps with peaks provide some warning before the head comes in contact with a moving object. They should be provided in a sufficient variety of head sizes or with a sufficient range of adjustment to fit all persons.

Hair nets or turbans, preferred by many women, are not considered sufficient protection around moving machinery. Sometimes their use is a compromise with feminine taste.

Eye, Head and Respiratory Protection—Definitions

National Bureau of Standards
Handbook H24

Protector. A device placed in front of or over the eyes, face or head to afford protection from the hazards in industrial processes or from the natural elements.

Goggles. An optical device worn in front of the eyes, whose predominant function is protection to the eyes only.

Face Mask. A device worn before the eyes and a portion or all of the face, whose predominant function is protection to the eyes and face.

Helmet. A rigid device worn by the operator which shields the eyes, face and neck, and a portion or all of the other parts of the head and is held in place by suitable means.

Hood. A non-rigid device which completely covers the head, neck and portions of the shoulders so as to exclude dust and flying particles.

Shield. A device to be held in the hand, or supported without the aid of the operator, whose function is protection to the eyes and face.

Gas Mask. A device to be worn on the face, and so arranged that the inhaled air is drawn entirely through a canister which cleans it chemically.

Supplied-Air Respirator. A device designed to supply the wearer with air suitable to breathe while surrounded by a contaminated atmosphere, and to prevent the latter from being inhaled.

Hose Mask. A supplied-air respirator having a tight-fitting facepiece to which is attached a hose through which air may be forced by a blower, and through which the wearer can inhale whether the blower is operating or not.

Air-Line Respirator. An air-line respirator is a supplied-air respirator designed to be connected by a hose to a supply of fresh air under positive pressure sufficient to maintain a continuous flow into the facepiece.

Filter Respirator. A device designed for the wearer to inhale the surrounding atmosphere after it has passed through a filtering medium to remove the impurities. The filtering medium may chemically absorb or mechanically obstruct the impurities.

Cartridge-Type Respirator. A filter respirator whose filtering equipment is carried in one or more cartridges mounted on the facepiece. Such a respirator may be a mechanical filter respirator, a chemical filter respirator, or a combination of both.

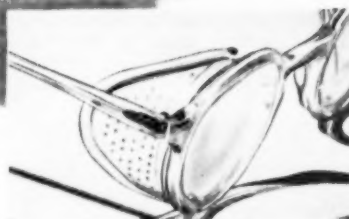
One of **K**imball's Many!



Just one of the many styles designed by KIMBALL for greater working safety and comfort. This KIMBALL AC-3-A Safety Goggle with flesh colored cellulose acetate butyrate frames has adjustable nose pads and a wide skull temple with flared tip. These goggles are sturdy, neat, light-weight and comfortable. They will hold their shape and are made of slow burning material for added safety. The skull bow or riding bow temple is optional.

Made in three lens sizes and five nose bridge widths. Equipped with 6.00 Dioptre curved lenses, either clear or Kim-tint. Prescription ground if desired. Also available with safety side shields in model AC-33-A. Same Goggle without adjustable nose pads is model AC-23-A.

Our "EYE PROTECTION" catalog lists our complete line of Safety Goggles and Spectacles.



other Kimball Safety Products

EYE PROTECTION: Spectacle Goggles, Welding Goggles, Composition Goggles, Side-shields.

HAND PROTECTION: GLOVES: Welder's, Asbestos, Steel Stitched. MITTENS: Welder's, Asbestos, Steel Stitched.

BODY PROTECTION: CLOTHING: Wool, Flame-Proofed Cotton. LEGGINS and SPATS: Leather, Asbestos, Flame-Proofed Cotton.

APRONS: Leather, Asbestos, Flame-Proofed Cotton.

Kimball SAFETY PRODUCTS COMPANY
9310 Wade Park Avenue • Cleveland 6, Ohio

Foot Protection

FOOTWEAR for the industrial worker must protect the feet against moisture and hot substances, rough surfaces and sharp objects underfoot, and falling objects. Shoes must be durable, properly fitted and comfortable. Many types of industrial shoes meet these requirements.

Footguards, supplementing safety shoes for more severe exposures protect the instep as well as the toes.

Safety shoes. As generally used, the term means shoes with reinforced toecaps. These are available in a variety of styles for men and women.

Steel toecaps are specified for most occupations because of their ability to resist heavy blows.

Fiber and plastic are used for shoes worn around electric equipment where resistance to impact is secondary to the need for insulation.

Standards. American War Standards, Z41 Series, of the American Standards Association, are still the accepted guide for purchasers of safety shoes for men and women.

Specifications call for a well-constructed, durable work shoe with the toe reinforced with a steel cap. The cap is supported on a flange resting on the sole. It must support a static load of 2500 pounds and resist the impact of a 50-pound weight dropped one foot. When subjected to either test, the inside of the toecap must not come closer than one-half inch from the upper surface of the sole.

Strength requirements for shoes for both men and women are identical.

Shoes meeting these requirements bear an identification stamp on one shoe of each pair. The stamp indicates

the type of shoe according to the code classification.

Distribution

To secure acceptance of foot protection, safety shoes must be comfortable and properly fitted. Purchasing must also be made convenient.

Many of the larger companies maintain well equipped stores with a wide range of lasts and sizes and trained attendants to fit the shoes. Shoes are sold at cost and employees may buy them on the payroll deduction plan. Safety shoes are sometimes awarded as contest prizes.

Smaller plants are not always in a position to stock an adequate range of sizes or provide expert fitting service. Many companies have made arrangements with local shoe dealers whereby employees may purchase shoes through payroll deduction.

A mobile shoe service is offered by dealers in some areas. A truck equipped as a shoe store is manned by an experienced fitter who is responsible for all adjustments. A variety of styles and a full range of sizes are carried. Periodic visits are arranged and between visits shoes can be obtained quickly on special order.

This service is rendered on a moderate mark-up basis and the plant can charge the employee any part of the cost.

It is desirable for a worker to have more than one pair of safety shoes so they can be rotated. The shoes will last longer and be easier on the feet. The wearer will also have a pair available while the other is being repaired.

Many companies encourage purchase of safety shoes for dress. They know that the buyer's feet will be protected

when the shoes end their days on the job.

Types of Shoes

Safety shoes, generally, are well made on lasts designed for comfort. They are available in many types and styles, some suitable for street wear. The protective toecap does not add appreciably to the weight or cost of the shoe.

General purpose shoe. The most widely used type is the blucher, in high cut or oxford styles. It is available in a wide range of sizes, widths and lasts, ranging from rugged, heavy-duty styles to those suitable for street wear. It is the basic type, with certain differences in detail for special occupations.

Foundry shoes. An early type of safety shoe was the foundry shoe with elastic panels at the sides. There is no opening on the instep where molten metal or hot sand can penetrate and the shoe can be pulled off quickly in an emergency. This model is furnished with steel box toe.

Spark-proof shoes. Shoes with brass hooks and eyelets and brass nailed heels are worn in some industries where sparks from iron or steel might ignite flammable gases.

Shock-resisting shoes. Some are non-metallic with fiber box toes; others have steel box toes which are partially insulated. These shoes are designed for work around electric current. They are also worn by those handling flammable materials, by workers in explosives plants, and in grain products refining operations.

Conductive shoes are designed to ground body static and prevent its building up in the body to the point where it could cause a spark.

The conductivity of these shoes is affected by other conditions. Wool, natural silk and nylon socks act as insulators to the body; cotton, lisle or rayon are satisfactory. Foot powder also serves as an insulator. The floor as well as the shoes must be a conductor.

Rubber footwear. Where work must be done in deep mud or in water, rubber boots contribute to health, comfort and safety. Rubber boots are available with steel box toes.

Soles and Heels

Leather is comfortable and durable for normal conditions. Oak leather will not give satisfactory service where heat is excessive or where the shoe is subjected to continuous dampness. Chrome tanned leather is more resistant to heat.

Rubber is resistant to moisture, alkalis and most acids. It deteriorates quickly when exposed to grease, oil, solvents, some acids, or excessive heat.

Neoprene is resistant to moisture and to grease, oil and solvents that would ruin rubber. It stands up well against cutting and abrasion.

—To page 94



A wide range of styles and sizes of safety shoes can be carried even in limited space. Proper fitting means more protected feet. (General Electric Co.)

new Willson BRONZE safety spectacles



another Willson **first**
combining **eye protection** with
the **color styling** workers want today

Not one, but **two** new features make these sturdy safety spectacles an exceptional value. Their distinctive bronze color gives them a pleasing appearance. And the new non-flammable frame is toughest plastic made for spectacles—won't chip, crack or craze—and has greatest shock resistance.

Willson Bronze styles feature the "keyhole" bridge and popular Hi-Line® temple. Brand-new wire core

spatula temples add an extra comfort feature you'll welcome. They're easy to adjust for a perfect fit!

These attractive spectacles are available with Super-Tough® heat treated glass lenses or Willson Plas-Tough® plastic lenses. A full range of eye and bridge sizes make these spectacles ideal for use with prescription lenses. See your nearest Willson distributor for these new Willson Bronze Styles—or write for bulletin.

Style WB—choice of new spatula temples as shown, or half-plastic, half-cable type temples.

Style WBS—has matching bronze sideshields.

For those who prefer flesh-colored plastic spectacles, with the same safety and comfort features and choice of temples, see Style WK and Style WKS.



More Than 300 Safety Products
Carry This Famous Trademark



WILLSON®

Established 1870

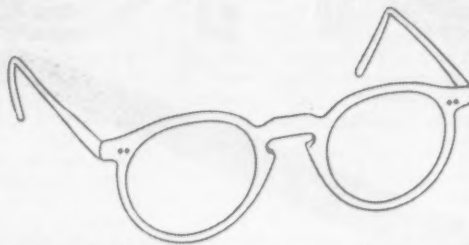
Willson Products, Inc., 205 Washington St., Reading, Pa.

● When you want to be sure of the protection you provide—specify safety eyewear by Bausch & Lomb. There is none better designed, none better made! On these pages are a few examples. All spectacle-type models may be fitted with lenses ground to individual workers' prescriptions. Write for catalog showing the complete line: Bausch & Lomb Optical Co., 90315 St. Paul St., Rochester 2, N. Y.

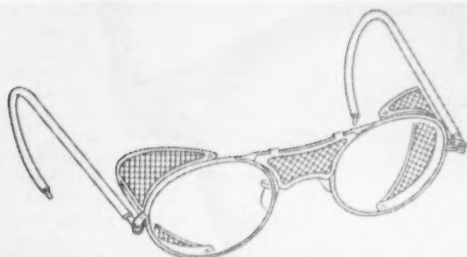
When you're



H-10 For general use in semi-hazardous areas. Non-corrosive white metal frame, drop oval 6.00D curve lenses, rigid double bridge construction, adjustable nose pads, flexible cable-type temples with sweatproof non-flammable insulated covering. Available with Ray-Ban absorptive lenses.



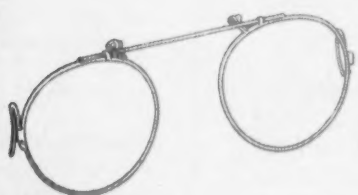
Y-40 Acetate frame model designed for protection against frontal impact, particularly where explosion or spark hazards are present, because acetate will not support combustion. Ful-Vue construction. Ideal for workers whose skin is sensitive to metal. Clear or Ray-Ban glass.



J-11 Same as H-10 (above) except fitted with non-corrosive wire mesh nose and side screens giving impact protection from every angle. Recommended for use wherever the impact hazard is greatest and most uncertain. Also available with Ray-Ban lenses where glare hazards prevail.



M-50 Here is the Ful-Vue model in all-metal spectacles for use with hardened prescription lenses. Widely used indoors and out where adequate protection against frontal impact is needed, but where smart styling is also a desirable factor. Features similar to H-10 except bridge has auxiliary concealed reinforcement.



H-30 This is a special Hookover for wear over prescription safety lenses for the purpose of protecting and prolonging the valuable prescription lenses—particularly bifocals. The Hookovers are not supplied with hardened lenses. Available for safety glasses with or without side shields. Also in Ray-Ban.



P-37 This is basically the M-50 frame (above) but with Ray-Ban lenses and green acetate side shields for use generally where protection is required from all-angle impact and from harmful rays emitting from welding arcs and other intense light sources. Ful-Vue temples permit unrestricted wide-angle vision.

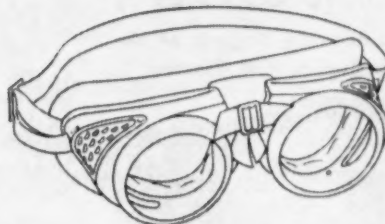
FILE THESE PAGES in a handy place for quick reference. But also be sure you have full details not only of these basic models, but of the entire line of Bausch & Lomb safety eyewear. Remember, your Bausch & Lomb supplier is thoroughly trained and experienced in solving eye protection problems. He is glad to be of service.

sure of the QUALITY...

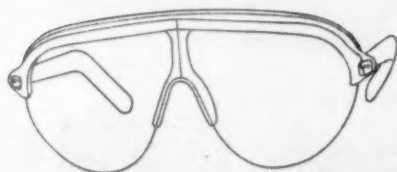
You're sure of the PROTECTION



W-31 BAL-guard all-acetate eye shield, a coverall for flexible, practical protection at low cost. Provides ample protection against all-angle impact, as well as splash and dust. May be worn over regular or safety glasses. One-piece curved acetate lens may be replaced in seconds. Also available in transparent green frame and opaque brown. Lenses also in clear or transparent green.



S-64P Arc-Ban Padded Coverall for wear over prescription lenses to protect workers' eyes in welding and similar occupations. Sponge rubber face pad provides a lightweight comfortable bearing surface against face. Louvre-type side shields provide light trap and still give ventilation. Extra large, lightweight molded eyecups resistant to oil, grease, water and acid.



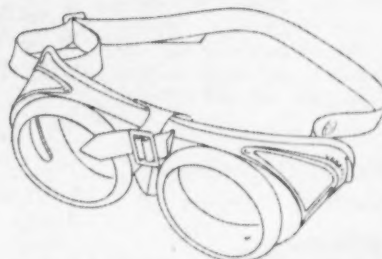
W-20 BAL-spec all-acetate eye shield, spectacle-type, extremely lightweight, easily worn over regular safety glasses. Especially suitable for supervisory personnel and plant visitors who pass in and out of hazardous areas. One-piece curved acetate lens may be replaced in seconds. Available with clear or green lens.



Y-79 This is the basic Y-40 (preceding page) but with acetate side shields for protection from impact from side as well as front. Recommended for workers whose skin is sensitive to metal and for use in areas where explosion or spark hazards are present. Ful-Vue construction.



Y-41 An outstanding contribution to comfort, this acetate frame has adjustable nose pads. For use generally by office workers and supervisors who pass in and out of hazardous areas, and for use wherever non-inflammable, non-sparking frame is required. Ful-Vue construction. Also in Ray-Ban.



S-61 Ideal in occupations where large and heavy flying particles or objects are constant hazard. May be worn over prescription glasses. Ventilation provided through non-corrosive metal side screens. Insulated adjustable nose-bridge strap. Flat lenses, also available in Ray-Ban safety glass.



BAUSCH & LOMB

Safety Eyewear



SELLSTROM

*Quality
Eye and
Face*

SAFEGUARDS

Published by Sellstrom Manufacturing Company, 622 No. Aberdeen St., Chicago 22, Ill.

EXTRA BIG JUMBO WELDING GOGGLES

Accommodate the largest of the
Large Prescription Glasses



There is a real surprise in store for the users of the old No. 610 Jumbo welding goggles. They were designed to fit over the then large prescription glasses.

Now, as an extra service, these goggles have been further enlarged by a full inch. This makes them leaders in keeping in step with the new developments. The narrowest inside measurement is 5-1/2 inches. They can be adjusted to a width of 6-1/2 inches. Just measure the widest prescription glasses you can find. You will quickly discover that these new No. 610 welding goggles will not only accommodate the largest of the large prescription glasses, but there is lots of room to spare.

Another big advantage is the one-piece balanced frame which permits putting the goggles on and off with

one hand. Both eye cups operate as a single unit, but can be adjusted to fit any face as perfectly as if custom made.

There are no rivets or nose piece to pull loose. Rolled edges for perfect comfort. Each eye cup has a total of eight light-proof ventilators, furnishing an abundance of ventilation, reducing fogging to a vanishing point.

Additional Welding Lenses for Special Purposes

Excelolite. Furnished in your choice of "heavy" or "thin" style. Carefully graded for density. The "heavy" meets all Federal specifications.

Smoke Green. Tones down the glare from source of light. Reduces Ultra Violet and Infra Red rays.

Cobalt Blue. Brings out red portion of flame.

Green Welding. Recommended where small amount of Infra Red rays are encountered.

Ruby. Used where red color helps to determine outline of work.

Sel-Blue. Brings out the white portion of a flame.

Sel-Green Hardened. Furnished in three shades. A (light) 1.5. B (medium) 1.7. C is shade 3. Meet all Federal specifications.

Recommended Industrial Goggle Lenses

XL-Hardened. Made from optical blanks. Ground, polished, edged and etched. Meet drop ball specifications. 6.00 diopter, in sizes 50 m/m round; 44 (42 x 45); 47 (45 x 48); 49 (48 x 51) m/m. 1.25 diopter curve, in sizes 15.6 and 50 m/m round; 44 (42 x 45); 47 (45 x 48); 49 (48 x 51) m/m drop oval shape.

Sel-Safe. Laminated lens. Two thin pieces of glass with piece of plastic in between and pressed to make single lens.

Standard Protection. Optical glass, ground, polished and edged. Unhardened. Furnished only in flat heavy.

Sel-Hard. Treated to withstand severe blows. Flat, ground, polished, hardened, edged and etched. Meet all Federal specifications.

Wire. Lenses formed from 20 mesh brass wire. Effective only where large flying particles are prevalent.

Litewate. Made from optical perfect plano plastic 3 m/m thick. Extremely light weight.

Special Shapes. We have a large variety of special shaped lenses, such as 50 x 60 m/m, bent rectangle-corner cut, a variety of eight different pear shaped lenses, etc.

Sel-XX Welding Goggle Lenses in the "Peep-Hole" Inspection Package

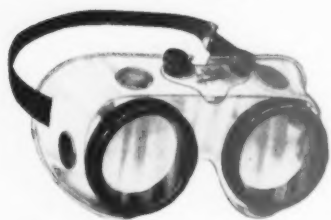


Sel-XX welding goggle lenses offer you unusual advantages. They are made from top quality optical blanks and thoroughly inspected at every manufacturing operation.

Densities are graded and checked by electronic instruments to assure accuracy in pairing for density. We offer the standard 50 m/m size, but on special order can furnish these lenses in other sizes from 45 m/m to 51 m/m. Available with plain or beveled edges. Densities from 2 to 8, with No. 5 the most popular.

These Sel-XX lenses are packed side by side, one pair in a peep-hole package. This permits inspection of density and accuracy of pairing without opening the package. Inspection of lenses is so simple that it is necessary to actually see this improved package to fully appreciate the many advantages. The package also prevents breakage, scratching or otherwise damaging the lenses. Sel-XX lenses surpass Federal specifications. They can be hardened if desired.

The No. 612 Companion Industrial Goggles



The No. 612 industrial goggles are of the same construction and the same enlarged jumbo size, but moulded of clear plastic for wide vision, and with the conventional screen ventilators.

The new plastic "707" Safety Goggle combines

Protection — Comfort — Appearance

PROTECTION — is still the basic purpose of this new style goggle. Its acetate frame has been designed to retain the safety lens even when subjected to severe impact. In addition to its general use throughout industry where eye hazards are encountered, the non-sparking "707" is especially suitable for use in chemical and electrical plants.

MODEL 707 PLASTIC FRAME SPECTACLE TYPE SAFETY GOGGLE



COMFORT — Wire core temples with cable wound ends permit easy adjustment for a snug, comfortable fit. This light weight goggle with large wide flaring nose pads receives the utmost in worker approval.

APPEARANCE — Flesh tint, high line temple, keyhole bridge and drop-eye shape combine for a distinctly personal look.

The "707" is available with flat, 1.25 or 6.00 curve, heat treated safety lenses.

*Order Direct
and Save!*

PENNSYLVANIA OPTICAL COMPANY

READING, PENNSYLVANIA

Known for Fine Ophthalmic Products Since 1886

Foot Protection

—From page 88

Cord or cork incorporated in rubber or neoprene gives good antislip properties to soles and heels.

Cord soles and heels, similar in construction to automobile tires have been giving good service under severe conditions for many years.

Cork blended with the rubber or neoprene is an excellent material. Slip resistance is good and the soles are light and flexible. They also help to insulate the feet against heat or cold.

Wood soles are used for extreme conditions of heat, dampness, oil, acids or caustics underfoot. They are popular in steel mills, foundries, and other places where hot operations are carried on. They also afford protection against nails, broken glass, scrap metal, and other sharp objects.

Wooden-soled shoes can be obtained with steel toe caps or with guards which cover toes and insteps.

Where shower baths are used, paper slippers or wooden sandals are sometimes provided to reduce the danger of foot infection. Paper slippers are destroyed after one use; sandals are disinfected frequently.

Foot Guards

Where unusually heavy objects are handled, feet may need more protection than is provided by shoes with reinforced toes. For such work, foot guards of heavy gauge, flanged and corrugated metal are obtainable.

The guards are strapped on over the shoes and protect the instep as well as the toes.

With the flange resting on a firm floor surface, foot guards should stand an impact of at least 300 foot-pounds without being dented sufficiently to

damage the shoe underneath or injure the foot.

Foot guards are also made with soles of rubber or caked steel to minimize slipping hazards.

Combination shin-foot guards, with an aluminum alloy shin protector hinged to the foot guard, are available.

Records for each employee customer should be kept. A 3 x 5 inch card shows name, department, payroll number, and details of each transaction. These include date, stock number, size, width, price, and payment. On the reverse side of the card, such information as history, details of foot trouble, and other comments may be recorded.

Leg Protection

PROTECTION for the legs is required in certain industries against the hazards of hot materials, corrosive substances, blows from sharp tools or heavy objects, and bites of poisonous snakes.

Protective garments vary from waist-length leggings to spats. For some occupations the extra protection of the longer types is desirable.

Materials commonly used are:

1. Asbestos for protection against molten metal, severe heat and heavy sparks.
2. Chrome-tanned leather for less severe exposure to splashes and sparks.
3. Fire-resistant duck to ward off light splashes and sparks.
4. Rubber, neoprene and plastic for work with acids, alkalis and hot water.
5. Lightweight alloys or fiber for protection against blows from axes, adzes, and heavy objects.

Men who work with molten metal use leggings designed to be removed instantly in an emergency. The leggings should have flares to protect the instep, and should be free from projecting buckles and clasps.

Chrome leather, when new, is less resistant to hot metal splashes and sparks. With use it acquires a tougher surface. It has been recommended that the operator keep out of the line of fire as much as possible until the garment has been broken in.

Knee pads are worn on jobs which require continuous kneeling.

Protection Against Snakes

Poisonous snakes are a hazard in some regions. Construction, petroleum, public utility and farm workers are among those most exposed. Bites received by a standing person are invariably below the knee. High boots are frequently worn, but more effective protection is provided by fiber leggings. Coverings of water-proofed duck protect the leggings against long



new



Unigoggle

A One-Cup Headrest Goggle

made expressly for Gas Welding, Flame Cutting and Brazing

• **GOGGLE**, with its large ventilated inside area, is lighter, cooler, easier to wear. Its one piece molded plastic is strong, flame resistant, non irritating to the skin. It bears lightly, yet firmly, against cheeks and forehead, where its good fit excludes light and heat rays. It may be worn over regular prescription glasses or safety spectacles.

• **LENS**, available in Federal Specification shades 3 through 6, is of standard 2 by 4 1/2" size, protected by a cover glass. New spring clip fastening makes the lens easy to replace; no tools are needed.

• **HEADREST**, with cork sweatband for comfort, is of light, easy to clean plastic, and is readily adjusted to any head size. Spring, concealed within telescopic arms, holds goggle snugly against the face. Hinged from opposite sides, weight is evenly distributed.



JACKSON UNIGOGGLE type W-60, shown above, has plastic headrest, telescopic arms.

JACKSON UNIGOGGLE type WR-60, shown at left, has same eyecup and choice of lens shades, but is held against the face by an adjustable, elastic headband.



Goggle fits cheeks and forehead snugly, gently, with wide rim for comfort



To raise, pull up and forward in one quick movement... takes one second



Put back on guard again, goggle protects this welder quickly, comfortably

JACKSON
PRODUCTS
WARREN - MICHIGAN

sold World-Wide...
through Distributors
and Dealers

SERIES 1110
FACE SHIELD



SAFETY

BEGINS WITH

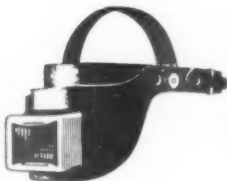
Dockson

HEAD & EYE
PROTECTION

FACE SHIELDS



Sturdy 9" x 17" replaceable window offers full vision. A choice of several types and models.



Series 1180 adjustable Eye Shield. Entirely supported by headgear for comfort.



Pliable, metal bound, replaceable window shields (4" or 6") complete with sweatbands.

Built for Better Service

Dockson offers a full range of Head and Eye Protection that will reduce your plant injury costs. Operators will wear Dockson safety equipment because it is engineered for comfort and durability—and always "Built for Better Service."

In all Dockson goggles, face shields and helmets, safety has been carefully built-in along with sturdy construction and comfort. Every model of Dockson protection equipment has been designed to meet the hazards of the particular job.

Whether for work or inspection there is a specific Dockson model made to give your operators dependable safety. Write us today for a complete catalog of Dockson Head and Eye Protection.

GOGGLES

Standard quality spectacle designed for frontal protection against impact hazards.



General purpose goggle design especially suited for chipping and grinding protection.



Series 70. Recommended when corrective glasses are, or are not, worn. Featherweight plastic eye cups.



Series 66 Monelite Goggles for use on Oxy-Acetylene welding, cutting, lead burning and brazing. Easily adjustable for face width and head size.



THERE IS A DOCKSON DISTRIBUTOR
NEAR YOU—NAME ON REQUEST.

Dockson
CORPORATION

3839 WABASH AVENUE, DETROIT 8, MICHIGAN

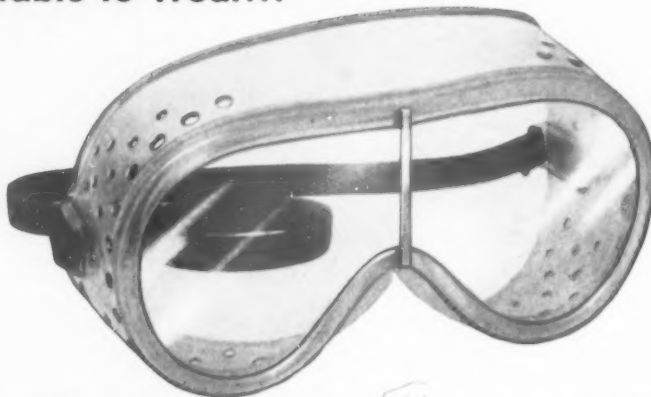
PUT THIS



TEAM

Comfortable to Wear...

Model 440
COVER-ALL
For Complete
Protection



SOFT VINYL FRAME — FITS OVER ALL PRESCRIPTION GLASSES

Extra-soft plastic frame with soft nose-flange fits snugly, yet comfortably, around any face contour—prevents foreign objects from entering in any direction!



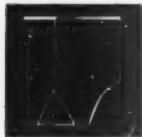
6" WIDE REPLACEABLE LENS

The optically correct methacrylate lens provides full protection against extreme impact. Does not shatter. Lens is extra-wide (6") for picture-window vision, and is easy to replace. Improved metal lock bar holds lens tightly in frame. Frame acts as bumper to prevent scratching lens when laid face down.

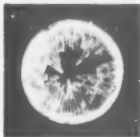
EYE-SAVERS CAST METHACRYLATE

The perfect optical lens material that's SAFE
COMPARE EYE-SAVERS LENSES TO GLASS!

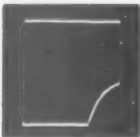
Eye-Savers lens Tempered glass lens Eye-Savers lens Tempered glass lens



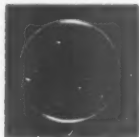
Resists impact up to 11.6 inch-lbs. average. Note clean fracture without tendency to splinter.



Fractured at 7.2 inch-lbs. Note dangerous splinters which may aggravate injury if driven into eye.



Visibility is unimpaired through this optically-clear methyl methacrylate lens.



Note deep pitting. Visibility through this lens is seriously impaired.

IMPACT-RESISTANCE—Superior to Glass

SPARK-RESISTANCE—Superior to Glass

CHEMICAL and LIGHT RESISTANCE . . . Eye-Savers methacrylate lenses resist effects of chemical splashes as well as, or better than, glass. These lenses (even the clear lenses) filter out 96 to 100% of harmful ultra-violet rays, and green lenses filter sufficient infra-red rays for use in welding areas, but not for direct arc welding. Methacrylate optical qualities for clear, non-distorted vision are superior to most glass and all other plastics.

SAVE YOUR EYES WITH METHYL METHACRYLATE!



SEVERAL VENTILATION AND COLOR STYLES

Screen ventilation shown at left, standard ventilation shown above. Lens colors: clear or light, medium, and dark green.

MODEL 441
WITH ACETATE LENS

The same soft plastic frame with a laminated acetate lens gives light-weight flexibility for average impact. An ideal low cost unit for many eye hazards.

Keep a supply of these Eye-Savers handy. You'll have the correct eye protection for most job conditions.

Quality Eye Protective Equipment

Made by the Leaders in Plastics



WATCHEMOKET OPTICAL CO., INC.

222 West Exchange St.
PROVIDENCE 3, R. I.

In Canada: Levitt-Safety Limited, Toronto 10, Montreal 1

TO WORK FOR YOU!

Easy on the Eyes...



**Tuc-Away
SPECTACLE**
For Up To 90%
Protection



FEATHER-LIGHT PROTECTION WORKERS LIKE TO WEAR!

Attractive Tuc-Away design and shatterproof methacrylate lenses provide sure safety for most eye hazards. Preferred by many because workers like to wear them! Feather-light construction and smart appearance promote worker cooperation. Universal nose-piece gives added comfort, eliminates extra size stock.



REPLACEABLE LENSES SNAP-IN: SNAP-OUT

Clear or colored lenses for the eye hazard are easily inserted and removed by the worker. Eliminates special repair departments.



RETRAX* TEMPLES FIT ANY FACE

Retrax* temples telescope in and out to any desired length for perfect fit. Eliminates the problem of individually fitting workers. Club temples also available. *T.M.

Put this team to work for you. Ask your safety supplier to show you samples of both these popular Eye-Savers!



SEMI-CUP LENS

Clear view 90% protection.

FULL 1" SIDE SHIELD

Clear view side protection.



REGULAR SIDE SHIELD

For average eye hazards.

Available in clear or light, medium, and dark green.

METHASPEC

**WATCHMOKET
eye
SAVERS**

SPECTACLE EYE SHIELD

SAFE · STURDY LIGHTWEIGHT



The low cost Methaspec is a curved one piece cast methacrylate (optically correct) eye shield providing excellent protection . . . ideal as visitors' goggles because exclusive features provide easy adjustment to fit any head. Retrax temples are adjustable for length, as well as lens angle, to fit comfortably close to the face. The opaque visor eliminates overhead or sun glare. Available in clear or light or medium green lenses.

Quality Eye Protective Equipment

Made by the Leaders in Plastics



"SPLIT-JOINT"
PLASTIC FRAMES

"TUC-AWAY"
SNAP-OUT LENS

"METHASPEC"
EYE SHIELD

LOW COST
ONE PIECE

**WATCHMOKET
eye
SAVERS**



VINYL FRAME
FORM-FIT



MOLDED
CURVED



MOLDED
SQUARE



HEAVY DUTY
FACE SHIELD

WATCHMOKET OPTICAL CO., INC.

222 West Exchange St.
PROVIDENCE 3, R. I.

In Canada: Levitt-Safety Limited, Toronto 10, Montreal 1

When Dependability Matters



No. 4 Face Shield

CHOOSE STA SAFE FACE SHIELDS

- *Sturdy*
- *Efficient*
- *Comfortable*

StaSafe face shields are designed for full face, lightweight protection against sparks, acids and flying particles. The wide plastic front affords clear vision as it floats comfortably on the StaSafe headgear. It is flame resistant and easily replaceable. Insurance against possibly serious injury, there's a StaSafe face or eye shield to fit your need!



Hinged-Offset Headgear

A feature only StaSafe offers! To give a comfortable, as well as secure fit, StaSafe has developed this double adjustment headgear. It adjusts to head contour quickly and easily.

These are but a few of the many StaSafe face and eye shields available to you. Complete information is contained in the StaSafe Bulletin No. 581. Send for your copy today!



Routers Mask
In Off Face
Position



No. 9 Lightweight
Eyeshield

STANDARD SAFETY EQUIPMENT COMPANY

232 W. ONTARIO ST.

CHICAGO 10, ILLINOIS

Conservation of Hearing

WHERE SOUND cannot be reduced to comfortable levels, workers can be protected by properly designed and fitted ear protectors.

Rubber ear protectors available commercially are reported to lower sound 20 to 25 decibels. One type uses neoprene which is non-irritating and more resistant to ear wax and cleaning alcohol.

To give the fullest protection, a stopper must be fitted into the ear canal so that noise does not leak around the edges. This may cause uncomfortable points of pressure. To overcome this difficulty, individually fitted ear molds have been developed.

To make the mold, a plaster cast is made in the wearer's ear. The cast is then used to make a lucite plug which is non-shattering, non-flammable and has a relatively low coefficient of expansion.

The lucite plug reduces noise 30 to 40 decibels. Ordinary conversation is heard without difficulty. This is important when instructions and warnings must be heard.

Soft plastic placed directly in the ear and allowed to harden is another type of protector. After it is withdrawn from the ear, surplus material and sharp edges are removed. The inner end of the mold is coated with rubber and heat treated before use.

Pliable balls of cotton and wax, molded by the user to fit his ear, are low in price and can be discarded when soiled. The mold is softened and shaped with the fingers before insertion.

A wad of cotton is the simplest and least effective form of protector. It lowers sound 10 to 15 decibels, depending on how well it is packed into the ears. Any form of ear protector also helps to keep out foreign material.

Hearing Aids

Deaf persons can work with normal efficiency and safety in many jobs. In other occupations, however, deafness may be a handicap and a hazard to the individual and his fellow workers. Salvaging the skills of persons with defective hearing is an important phase of vocational rehabilitation.

Many persons with varying degrees of deafness have been helped by hearing aids. For best results, these devices require careful fitting and usually service at intervals after fitting.

The American Medical Association maintains a list of hearing devices which meet essential requirements. Helpful information is also contained in National Bureau of Standards Circular 516, Selection of Hearing Aids.

Audiometric examinations are useful in measuring progressive loss of hearing. When hearing has suffered from exposure to excessive noise, an employee may be transferred to quieter surroundings.

DIRTY GLASSES

like dim lights and dull tools

cause MISTAKES

keep them **CLEAN** with
SIGHT SAVERS

the Dow Corning **SILICONE** treated tissues



Install SIGHT SAVER Cleaning Stations

Increase production, improve quality
Employees work more rapidly, more accurately and with less eye fatigue when their glasses are Sight Saver clean. Sight Saver tissues are the most convenient size to use; contain exactly the right amount of the right kind of silicone; save time wasted on less effective cleaning methods.

Inexpensive to install and maintain
Adhesive mounting strips supplied for easy installation on metal, wood, glass or tile walls. Foolproof dispenser eliminates waste, issues a single 3"x7" tissue at a time. No maintenance required. Simply insert refill packets as required.

Preferred by millions of people
Sight Saver Cleaning Stations are specified by most Safety Directors because the superiority of Sight Saver tissues has been proved by world-wide distribution and repeated use by millions of people.



Available from leading
Safety Supply Houses

Cat. No. 60 Black Dispenser.....\$2.50
Cat. No. 61 White Dispenser.....\$2.50
Cat. No. 62 Safety Green Dispenser..\$2.50
Cat. No. 65 Refill Packet
contains 800 tissues..\$1.45

Quickest and easiest way to clean glasses. Like modern car polishes, Sight Savers contain a Dow Corning Silicone product that simplifies cleaning and polishing; gives added clarity and luster to glass; keeps dirt and oil from sticking to lenses.

Make eye safety programs more effective. Attractive Sight Saver Cleaning Stations encourage employees to keep their glasses clean; remove the best excuse they give for not wearing safety glasses.

First
in
Silicones



Atlanta
Chicago
Cleveland
Dallas
MIDLAND, MICHIGAN
Los Angeles
New York
Washington, D. C.

Respiratory Protection

—From page 85

hood or by a helmet of some rigid material. It should be covered both inside and outside with a plastic material, such as soft rubber, to increase both comfort of wearer and resistance to abrasive.

A window of transparent material, suitable for optical use, protected from the abrasive by a 30- to 40-mesh fine wire screen should be provided. Both window and protective screen should be readily replaceable.

Self-Contained Apparatus

When it is necessary to work in atmospheres immediately hazardous to life at distances from the source of fresh air greater than the 150 feet provided by a hose mask, self-contained apparatus furnishing oxygen or air may be used.

Care of Equipment

A central station for care and maintenance of respiratory equipment is desirable where many respirators are in use. Such a unit can also handle the distribution and maintenance of other items of personal protective equipment.

Each employee should be provided with two respirators and either a locker or a hook at the central station. Respirators should be branded or tagged with a number to indicate the employee to whom it is assigned.

The respirator should be turned in to the central station at the end of each shift to be cleaned and sterilized, and repaired if necessary.

Where the maintenance crew works several shifts, one respirator per employee may be sufficient. Usually, however, it is necessary to have one complete unit in the process of cleaning while the other is being worn.

Filters should be replaced when clogged, and the used ones discarded. Canisters should be replaced at regular intervals as recommended by the Bureau of Mines. Even when not in use they lose their effectiveness with time.

Cleaning and disinfecting. All parts, except canisters and cartridges, should be cleaned after use. Face pieces, air lines and hose may be washed with soap and water, rinsed in clear water, and dried.

All respiratory devices should be disinfected before being passed from employee to employee. Methods of disinfection include:

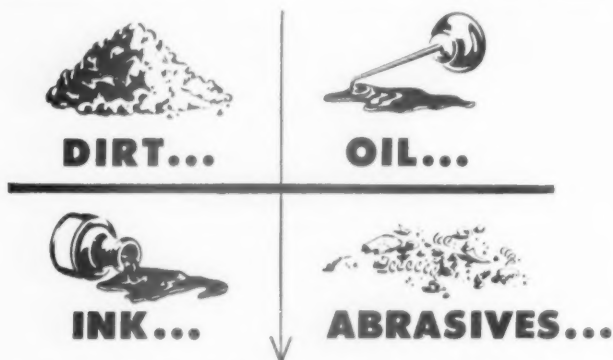
1. Immersion in solution of quaternary ammonium salt detergent. This material is not injurious to skin or to rubber.

2. Subjection to a moist atmosphere of antiseptic gas, such as formaldehyde, for 10 minutes.

3. Immersion for 10 minutes in a solution of formalin made by dissolving 1 part of 40 per cent formaldehyde in 9 parts of water.

Parts should be rinsed thoroughly after sterilizing to remove traces of disinfectant, then dried.

Elastic head bands may be damaged by sterilizing but they should be washed with soap and water. Bands should be replaced when the respirator is transferred to another employee.



disappear quickly, completely with low cost, disposable **KIMWIPES®!**



GRIT-FREE! Kimwipes keep safety goggles and shields clean without scratching, linting or "dusting."



Now—a safe, clean, absorbent tissue made especially for laboratory or plant! New Kimwipes® industrial tissues clean faster, easier, better—do every job from wiping ink to precision polishing without scratching, linting or disintegrating.

You'll find dozens of uses for Kimwipes—end the dangers of dirty, scratchy cloths—and completely eliminate unnecessary laundering. Each tissue is a "man's handful"; strong yet amazingly absorbent, and completely non-abrasive. So inexpensive, a fresh, clean tissue can be used for each application—then thrown away! Kimwipes are recommended especially for wiping safety goggles and face shields, after applying liquid cleaner, wiping up machine oil or dangerous chemicals.

Order a supply today from your distributor. Two tissue sizes—15" x 18" and 5" x 9". For complete information, write to Dept. AA-33, Kimberly-Clark Corporation, Neenah, Wisconsin.

A Product of
Kimberly-Clark

How's the Weather?



"Need our umbrellas?"

Workers in windowless office building of Heppenstall Company, Pittsburgh, look at light panel indicating weather conditions outside. White light means fair; green indicates cloudy; red warns of rain or snow. A similar panel is opposite the elevator on each floor.

GREATEST ADVANCE in EYE SAFETY

K-LENS-M

REG. U.S. PAT. OFF.

Liquid LENS CLEANING and ANTI-FOGGING



Brings Clear Safe Vision to Your Workers

Here's the modern way to promote the wearing of Safety Goggles. Install K-LENS-M Lens Cleaning Cabinets with K-LENS-M Anti-Fogging Stations, endorsed by Safety Engineers, to provide clean, clear safety goggles for your workers. K-LENS-M Lens Cleaner and K-LENS-M Anti-Fogging Liquid are used by leading manufacturing plants, packing houses, canneries, public utilities, government installations, foundries and business offices.

EFFECTIVE ON PLASTIC OR GLASS. Easy-to-use and safe.

Economical K-LENS-M Liquid Lens Cleaner and Tissues are dispensed by a compact metal dispenser cabinet. Cabinet contains large bottle of K-LENS-M Lens Cleaner, also two packs of K-LENS-M lint-free lens tissues; is equipped with spray pump and lock, and has disposal space for used tissues.

Separate attachment for K-LENS-M Anti-Fogging Liquid is easily attached to any metal K-LENS-M dispenser cabinet.

Easy to install, use and service.

Also available for off-premise use in individual pocket-size plastic "Twinkit," containing a bottle of K-LENS-M Lens Cleaner and a bottle of K-LENS-M Anti-Fogging Liquid.

K-LENS-M . . . Complete Lens Cleaning and Anti-Fogging Equipment
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 INCORPORATED
 CORTLAND 1, N. Y.

Manufacturers of

K-LENS-M

Liquid Lens Cleaner
 Lint-Free Lens Tissues
 Anti-Fogging Liquid
 Dispenser Cabinets
 Anti-Fogging Station



A Constantly Growing Line of QUALITY SAFETY PRODUCTS

THE NEW SAF-I-LENS

Available in 3 different lens materials—2 special formula optical plastics and hardened glass—fit all standard frames.

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Made of FIBER-GLASS which offers greatest strength-weight ratio available. Lightweight—greater strength, longer life. Complete line of cover and welding lenses available.

U.S. SAFETY SERVICE CO.
SAFETY EQUIPMENT & ENGINEERING

THE NEW SAF-HED-HAT

Made of FIBER-GLASS which offers the greatest strength-weight ratio available. Lightweight—Comfortable—Greater Strength—Longer Life.



THE SAF-I-SHIELD
Rugged one-piece design—Full protection from all impact hazards—Made of Optilite®—Low Cost—Genuine Comfort.

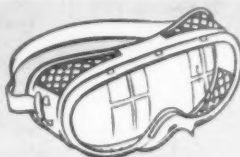
THE SAF-I-SPEC

Featherweight, Comfortable. Low cost replaceable one piece lens of Optilite. Meets Fed. Spec. for impact resistance. Optically correct.



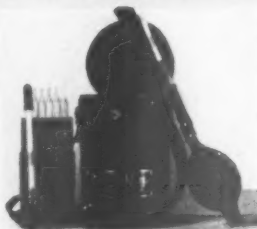
THE SAF-I-DUO®

One piece replaceable lens of Optilite. Velvet soft durable VINYL frame fits contour of all faces snugly. Four types of ventilation.



THE NEW SAF-I-FLEX

Crystal Clear VINYL frame permits wide angle side vision—New Type Grid Vents prevent fogging. One-piece replaceable Optilite Lens meets Fed. Spec. for optical qualities and impact. Fits over "wide" personal glasses.



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This Carbon Monoxide Indicator uses Colorimetric Indicator Tubes developed by National Bureau of Standards—Extremely Accurate—Quick Action—Inexpensive—Pocket Size.

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An acid goggle with velvet soft YELLOW VINYL frame—fits contour of all faces snugly—screen vents with hoods. One piece replaceable acid resistant plastic lens—optically correct—impact resistant.



HALO FACE SHIELD

Lightweight—Comfortable. Anti-glare green plastic spark protector for wide angle vision. New patented visor position hinge locks visor in "raised" or working position.

PEP-UP IMPREGNATED SALT TABLETS

Slow dissolving—Will not cause salt sickness or nausea. Packed in Expendable Dispensers at no extra cost. Meets U. S. Fed. Spec. No. SS-3-31D for Type 111. Class C. Dated Sept. 11, 1951.



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Safety Belts and Harness

WHEREVER men work at high levels, in closed spaces where the air may be irrespirable, or where there is danger of being buried by slides of loose material, safety belts and harness with life lines are needed.

Occupations in which safety belts are used routinely or occasionally include: linemen, window cleaners, structural steel and bridge workers, crane men, shipbuilders, forestry workers, miners, mechanics, painters, and workers entering tanks, bins and underground passages.

In selecting equipment, two types of use must be considered—"normal" and emergency.

Normal use involves comparatively light stresses applied during regular work. These stresses rarely exceed the static weight of the user.

Emergency use means stopping a man when he falls. This may subject every part of the belt to an impact loading many times the weight of the wearer.

Types of Equipment

Several types of belt and harness have been developed for various occupations. Most familiar of these are the lineman's belt and safety strap and the window cleaner's belt.

Belts of these types are built for extra severe use. Belting material and hardware have both received much study. The belts are usually serially numbered and dated so that records of age and condition may be kept.

For many occupations a lighter belt will provide ample protection against falls. These may be of the simple body type or the harness type. Both have dees to which a lanyard is attached. The harness type distributes the shock over the shoulders, back and waist instead of concentrating it at the waist.

Body harness with lanyard attached worn by workers in certain locations expedites their rescue if they should be overcome by gas or vapors, buried by falls of loose materials or injured in confined spaces.

Wherever the work requires a supplied-air respirator, harness and life line should also be used.

If long free falls are possible, the harness should be designed to distribute the impact force over the legs and chest as well as the waist.

The longer the free fall, the greater the impact force exerted upon harness and lanyard. It is therefore advisable to tie off the line as short as movements of the worker will permit.

Materials. Leather and cotton or linen webbing belts are furnished by most manufacturers.

Well tanned and well oiled leather is not easily attacked by most chemicals but it should not be left in contact with them. Regular cleaning after use is important.

Leather $\frac{1}{4}$ inch thick and $1\frac{1}{2}$ inches wide will have an ultimate strength of about 500 pounds. This is adequate for lifting a man out of a tank or bin.

Webbing will stand more heat than leather, and when soaked in water will dry out in its natural condition. Friction buckles can be used with webbing, avoiding the loss of strength at buckle holes.

Belts intended to check a fall demand strength proportionate to the possible distance of fall and weight of body. A 2" by $\frac{1}{4}$ " leather belt would probably arrest the fall of a window washer at 6 feet. It might break at a 10-foot fall.

For a comfortable margin of safety,

a window cleaner's leather belt should be at least 3" by $\frac{1}{4}$ ", or the equivalent.

Special types of webbing are available for certain uses. It can be wax treated to resist paint and mildew. For the chemical and petroleum industries webbing impregnated with neoprene resists acid conditions.

Quick release from a safety belt may be desirable in case of fire. Petroleum workers, for instance, use belts with a quick release buckle which can be disengaged instantly by a single motion of the hand.

Belts for some occupations contain loops and pockets for light tools.

Collapsible canvas tool buckets are also needed on some jobs so the work-

WHEN THE HEAT'S ON STASAFE KOOLPADS



**Make the
Difference
Between Par
Production and
Low Output!**

Sweat streaked glasses or goggles can mean real trouble for you. In hot weather, it takes a worker at least one minute to clean streaks from lenses. If he does this twenty times a day, it costs you twenty minutes of non-production. Multiply this twenty minutes lost by the number of workers you have wearing glasses or goggles. It really adds up at today's high cost of labor!

Koolpads can solve this problem. These featherweight, low cost, cellulose sponge sweatbands absorb sweat—keep glasses and goggles free from streaks and fog. With no loss of time, workers see better, feel better, work better.

STANDARD MODEL
with elastic headband

WELDERS MODEL
with snaps

Be Prepared!

Send Today for Descriptive Bulletin No. 582

STANDARD SAFETY EQUIPMENT COMPANY
232 WEST ONTARIO STREET CHICAGO 10, ILLINOIS

er may have his hands free while climbing. Edge tools should be protected by guards while being carried.

Shock absorbers incorporated in harness and lanyards reduce the severity of impact. This decreases both the possibility of injury to the wearer and failure of the equipment.

Lanyards. A 1/2-inch manila rope has an ultimate strength of about 2,600 pounds.

Nylon rope is somewhat more stretchy than manila which enables it to absorb shock and sudden loads. It has high tensile strength, wet or dry, is tough, flexible, durable, and easy to handle—is resistant to moisture and

mildew and can be stored wet.

Unolyn, another synthetic fiber, has shown remarkable ability for absorbing impact force. It elongates with constant resistance up to five times the original length. However, after being subjected to severe strain it will not return to its original length and should not be used again.

Care of Belts

Dust should be brushed off carefully so as not to scratch the belt. A leather belt should then be washed with warm water and saddle soap or castile soap. It should be rinsed in clean warm water and allowed to dry in room temperature.

Leather belts should be treated with neatsfoot, castor, soybean or a compound oil, not a mineral oil, to prevent drying out. Leather should never be exposed to excessive heat.

Webbing belts may be washed in soapy water, rinsed and dried by moderate heat. They are not damaged by any temperature up to the boiling point of water. The manufacturer of the belt should be consulted about the dressing.

Belts should be inspected before use by the employees wearing them. Every one to three months they should be carefully inspected by a trained individual.

Leather belts must be watched carefully for cuts or scratches on the skin side of the hide. A deep cut on the skin side warrants condemning the belt.

Fabric belts should not be used if the outer plies are cut or worn through. All belt hardware should be checked and replaced if it shows signs of wear. If the belt is riveted, each rivet should be examined separately.

Life lines should be washed with mild soap and water and dried in circulating air. They should not be exposed to high temperatures. Rope should be kept in open coils and never bent sharply.



if YOU had to wear them you'd choose **EYEGARDS**

The Only Goggles With The 10-Way Ventilation

BEST THING NEXT TO YOUR EYES



**FORM
FITTING**



**3 LARGE
VENTS
AROUND CUP**



**SUPER-LIGHT
PLASTIC**



**7 VENTS
AROUND
EACH LENS**

● EYEGARDS assure workers the very finest in eye protection and comfort — yet **THEY ARE PRICED SURPRISINGLY LOW!** Compare these outstanding features! — built-in comfort because the super-light plastic "form-fits" the face — greater protection because of exceptional high impact resistance — extra ventilation through three large vents at side of cup and seven additional vents around the lenses — cool and completely fog free. Get the "inside story" today. Write for free catalog.

● Illustrated is the No. 335 Welder's Cover-spec Goggles. A wide range of other types are available at savings.

AMERICAN INDUSTRIAL SAFETY EQUIPMENT COMPANY
3501 LAKESIDE AVENUE CLEVELAND 14, OHIO
DIVISION OF THE BURDETT OXYGEN COMPANY, Cleveland, Ohio

Increased Enrollment in Training Classes

Evidence of increasing demand for industrial safety training is reflected in applications for enrollment in courses offered by the Safety Training Institute of the National Safety Council. Applications received this year far outnumber those received in previous years during the same period.

The Institute offers five-day courses in "Fundamentals of Industrial Safety" and "Safety Management Techniques." Three of the six Fundamentals courses to be held in 1953 were filled to capacity enrollment by early February. The two Management courses have an excess of applicants, and those who cannot be enrolled this year are informed that they will be the first to receive notification of the dates of the 1954 courses.

Although the Institute recently made revisions in order to include 50 per cent more students in each Fundamentals course, it is not always possible to enroll a student in the course of his first choice. Applicants are enrolled in the order their applications are received. It has been possible to place every Fundamentals applicant in a course, although that course is not always his first, or even second, choice.

At present, Fundamentals courses which have openings are to be held June 8-12, November 9-13, and December 7-11. Information about the courses can be obtained from Glenn F. Griffin, Director of Industrial Training, Safety Training Institute, National Safety Council, 425 N. Michigan, Chicago 11.

ALLEN SANI-SPRAY STATION

For Cleaning and Fog-proofing Glasses and Goggles

- ✓ Self-contained
- ✓ No air pressure
- ✓ No attachments
- ✓ Compact size
- ✓ One step—one application
- ✓ Hang up ready to use



- ✓ Holds dispenser of Sani-Spray and 400 tissues plus receptacle for used tissues
- ✓ Lock and key for tamper-proof
- ✓ Heavy gauge steel with baked enamel finish

ALLEN OPTICAL COMPANY

85 ALLEN STREET
BUFFALO 2, N. Y.

McDonald SAFE-T-NEWS



New Air-Supplied Hoods Introduced

McDonald Sand Blast Hood

(left) is especially designed to allow sandblasters to work safely in the presence of harmful dusts. The hinged screen cover diminishes pitting. The heavy cape is double-coated with plastic to take heavy punishment and the muslin inner collar protects against dust seepage.

McDonald Blastfoe Abrasive Hood

(upper right) for sandblasters using shot, grit or sand. One-piece cloth cape, impregnated with Neoprene, covers entire unit to cushion the impact of flying particles and rebounding shot. Other features identical with Sand Blast Hood.



McDonald Lead Hood

(lower right) Muslin inner collar, in addition to single coated plastic cape insures against penetration of lead dust and fumes encountered in grinding operations. Has new McDonald Air Flow Valve.



McDonald DUSTFOE 55 Respirator Proves Popular



And no wonder! Breathing 50% easier, weight 25% less, size 35% smaller. New static web throw-away filter retains dust electrostatically. Weighs less than 3 oz. complete! U. S. Bureau of Mines Approval #2166 for dusts. Filter is 50% narrower to eliminate blind spots.

New GASFOE Respirator



for protection against nuisance exposure to organic vapors and acid gases. Only 4 oz. complete—so perfectly balanced that only slight tension on headband provides absolute seal. No interference with vision or working freedom. Every part replaceable.



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THE HIGH STYLE LINE.....

Iron Age "Commander"

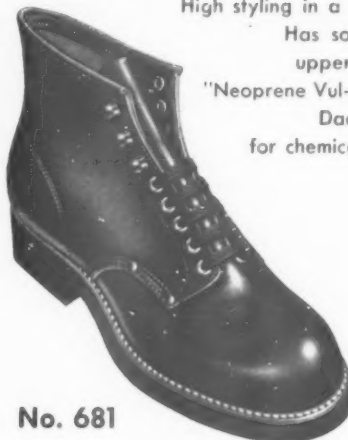
A smart plain toe smooth leather brown safety oxford with "Leatherplus" outsoles. Has a sweat-proof leather insole, an Armstrong cork filler and Winguard steel toe box. Stitched throughout with Dacron. Full leather lined.



No. 622

Iron Age "Work Horse"

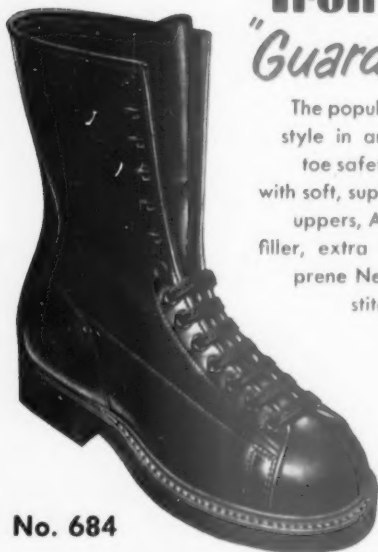
High styling in a plain toe high shoe. Has soft, brown horsehide uppers with leather lining, "Neoprene Vul-Cork" sole and heel, Dacron stitching. Ideal for chemical workers or where oily conditions are found.



No. 681

Iron Age "Guard sman"

The popular lace-to-toe style in an 8-inch steel toe safety boot. Made with soft, supple brown elk uppers, Armstrong cork filler, extra heavy "Neoprene Neo-Cord" sole, stitched throughout with threads of Dacron.



No. 684

Iron Age "Water Boy"

A "Neoprene Coated" black rubber work shoe 6-inches high with steel toe box, reinforced tip and leather insole. Ideal for all who work in wet, sloppy footing or in and around chemicals.



No. 990



The Safety Shoe For Industrial America

Iron Age Steel Toe

IRON AGE DIVISION, H. CHILDS & CO., INC.

Reasonably Priced

WHAT'S INSIDE EVERY IRON AGE SAFETY SHOE BOX?



Pick out a pair of Iron Age safety shoes from any box at random. What do you see? First, you'll admire the high styling that is really the trade mark for the entire Iron Age line. Smart appearance sells safety shoes to workers... boosts your coverage. Iron Age safety shoes sparkle with it.

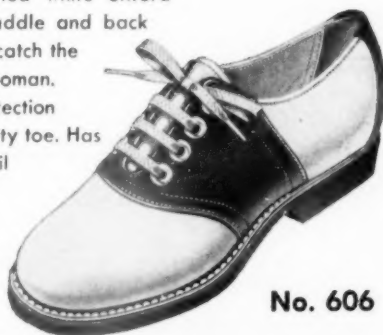
Now take a closer look at these shoes. Note the rich sheen, feel the suppleness of those plump leather uppers. Iron Age uses only the best grade hides, the finest tannages. Of course, you'll recog-

nize the nationally advertised outsoles. And inside these shoes you'll find a multitude of quality features... important details in design and workmanship that mean greater comfort and more foot miles of shoe life.

Finally, check the cost and prepare to be surprised. For Iron Age safety shoes with all their custom quality features are priced competitively. If you would like to have an eye-opening demonstration, an Iron Age representative is as close as your phone — or write us and he will see you.

Iron Age "Milady"

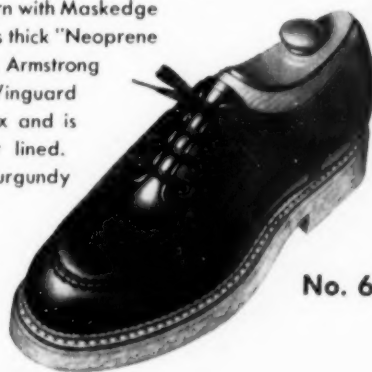
A smartly styled white oxford with brown saddle and back stay that will catch the eye of any woman. Offers full protection of a steel safety toe. Has "Neo-Cork" oil resistant sole and heel.



No. 606

Iron Age "Cruiser"

Built on the attractive, comfortable Klomp pattern with Maskedge last. Features thick "Neoprene Crepe" sole, Armstrong cork filler, Winguard steel toe box and is fully leather lined. Distinctive burgundy color.



No. 625

SAFETY SHOES

PITTSBURGH 12, PA.

Write for complete catalog showing over 40 styles

No matter what the industry...



No matter what the need...

HY-

has a Safety Shoe



H-301

Check every specification you want in a safety shoe for specific jobs in your plant. Then check with Hy-Test. We're sure you will find the specifications already "made up" in one of the more than sixty different Hy-Test types and styles. For example, there are 11 different kinds of soles in the Hy-Test line.



H-753



H-303

HY-TEST



SAFETY SHOES

TRADEMARK REG. U.S. PAT. OFF.

Insure Workers' Feet in Sure Protection





TEST

"Custom-Made" for every job

Hy-Test thus actually offers a custom-made service in safety shoes... custom-made to every job requirement. This wide selection plus exclusive quality and comfort features (such as anchor flange steel box toe and long-wearing Bol-Tan insole) are the reasons why American industry demands and depends on HY-TEST.



ALL HY-TEST
Safety Shoes
feature
Bol-Tan
leather
insoles



H-690



H-302



H-722

THE WORLD'S LARGEST SELLING SAFETY SHOE
DIVISION OF INTERNATIONAL SHOE COMPANY
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NEW YORK OFFICE: SUITE 1700, 225 WEST 34TH ST.



I KNOW I'M SAFE...
with **WOODEN SOLES!**

...FOR THE FOUNDRY



Stock No. 511-C. G.

Reece Corrugated Footguard has great strength, is light weight, can be attached to any Reece Boot or Shoe. Also protects from hot sand and boiling liquids.

ACID PROOF



Stock No. 7711

Reece Acid-Shoe withstands extreme caustics. Canvas uppers impregnated with neoprene. "Perfect Rocker" Wood Sole—Light weight. Sizes—5-13. No half sizes. No. 7704-S—Same as above with built in STRONG STEEL TOE.

SHOWER SANDALS



Stock No. 809

- Keep the feet at body temperature regardless of room or floor condition.
- Nails, Glass, Scrap cannot puncture.
- Protect against "Athlete's Foot"

FOR BROKEN TOES



REECE ORTHOPEDIC SHOE

No. x175-CG—Men's No. x173-CG—Women's for Broken Foot Bones—Crushed Toes WOOD SOLE with AIRFOAM insole acts as splint. Keeps injured foot immobile . . . reduces lost time accidents. Fits over bandages. Easily stocked, no rights—no lefts. Sizes: Small—Medium—Large. Available without foot guard.

*Write Today
for
Complete Catalog*

Protect from
"Athlete's Foot"

No. 440..... Perfect Rocker
No. 809..... Perfect Rocker
No. 140..... Platform Rocker
No. 180..... Platform Rocker

Sizes—5 to 13 Incl. or
small, medium, large,
lightweight, sanitary
protection.

They Insulate

STRONG STEEL TOE

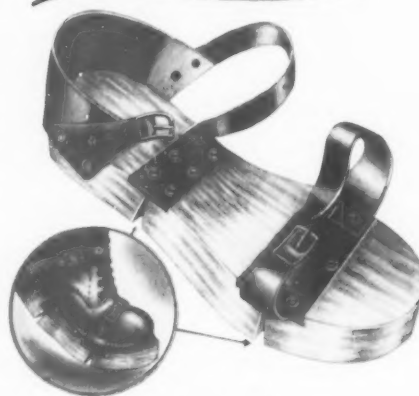


Stock No. 504-S

Double duty for safety with this REECE "PERFECT ROCKER" WOODEN SOLE and STEEL TOE SHOE . . . made with durable leather uppers. Sizes—5-13.

No. 501-S—Same as above with water proof leather uppers.

HOT FOOT SANDALS



Stock No. 351

An improved REECE "HOT FOOT" SANDAL with two strong sole leather hinges provides real insulation for those hot jobs. Straps on quickly over any shoe. Sizes: Small—Medium—Large.

No. 300..... One Hinge Sole
No. 500..... Pavers Sandal
No. 555..... Hinged Heel

REECE WOODEN SOLE SHOE CO.

BOX 32

COLUMBUS, NEBRASKA

There is no
substitute
for Reece
Wooden
Soles

"RUBBERHIDE"

Safety INNERSOLES

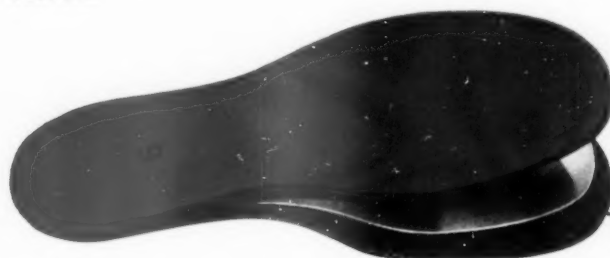
FOR RUBBER WORK SHOES AND BOOTS

"RUBBERHIDE" Safety Innersoles provide low-cost, maximum protection against foot injuries due to punctures by nails or other sharp-pointed underfoot objects. They make rubber shoes and boots more thoroughly *punctureproof* than the heaviest leather soles, and will last longer than the shoes and boots themselves.



NAILS CAN'T GET THROUGH...

... even when jumped on! This protection means actual SAVINGS ... eliminates lost time because of foot injuries ... contributes to lower compensation insurance rates.



TOP-QUALITY SOLE LEATHER....

ONE-PIECE, FLEXIBLE SPRING STEEL

SHEET OF RUBBERIZED CANVAS...

Foot Contoured — Flexible — Light Weight

Each "Rubberhide" Safety Innersole consists of a solid sheet of high-tensile spring steel between a layer of top-grade sole leather and a sheet of rubber-impregnated canvas ... the three inseparably bonded together. Made and stocked in all Rubber Boot and Rubber Work Shoe sizes.

Safeguard your employees with "RUBBERHIDE" Safety Innersoles. \$2.25 per pair, prepaid. Mail the coupon today!

Distributor Inquiries Invited

RUBBERHIDE COMPANY, INC.

710 WHITEHEAD ROAD, TRENTON 4, N. J.

RUBBERHIDE COMPANY, INC.
710 Whitehead Rd., Trenton 4, N. J.

DATE.....

Please ship following "RUBBERHIDE" Safety Innersoles, at \$2.25 pair, prepaid.

(Give Number of Pairs of Each Size Wanted)

Company.....

Address.....

City.....

Zone.....

State.....

☐ Charge

☐ Check Attached

☐ Send C. O. D.



"I am pleased to report that the shoes were very well received and hope you can arrange to handle orders in the quantities that it is necessary for me to stock. Once the word goes out that we can sell a shoe of this quality for such a fair price I am sure that the majority of the men will want to wear them."

**THANK YOU
MR. ANDERSON!**

**We couldn't have said it
better ourselves!**

Refining and Marketing Co.

*Rockford, Illinois
December 27, 1952*

The Safe-T-Shoe Co.
Mr. T. J. Dorsey
1226 Market Street
Chattanooga, Tenn.

Dear Mr. Dorsey:

You will find enclosed my check in the amount of \$15.00 to cover cost of safety shoes on our order #12798.

Please advise if you are able to furnish the price of safety shoes with the Vulcure sole in orders of two dozen pairs. Due to limitations of space the maximum order will have to be no more than two dozen pairs.

Please enter an order for one pair of #1510 size 9 1/2 to be sent as was the order of December 1952.

I am pleased to report that the shoes were very well received and hope you can arrange to handle orders in the quantities that it is necessary for me to stock. Once the word goes out that we can sell a shoe of this quality for such a fair price I am sure that the majority of the men will want to wear them. Our business has been neglected so it would be appreciated if you will include two features with your next correspondence.

Yours truly,

Harold R. Anderson
Harold R. Anderson
Agent, Insurance
of Personnel



**No. 400
\$5.25**

For rough industrial uses where a dress shoe does not belong, DORSEY goes all-out for comfort and long wearing durability. Goodyear welts, Dacron stitching, Armortite flange steel caps and steel shanks plus the finest leather and workmanship make these shoes an outstanding buy!



**No. 70
\$6.65**

**No. 404
\$5.75**

**No. 500
\$6.65**

**No. 625
\$6.65**

DORSEY SAFE-T-SHOE Company
1226 Market Street
Chattanooga, Tennessee

Gentlemen: Please ship us the following immediately: _____ prs. No. 70 @ \$6.65;
_____ prs. No. 400 @ \$5.25; _____ prs. No. 404 @ \$5.75;
_____ prs. No. 500 @ \$6.65;
_____ prs. No. 625 @ \$6.65.

Enclosed is ☐ Check ☐ Money Order ☐ Bill our account for \$ _____

Signed _____

Company _____

Address _____



Dorsey SAFE-T-SHOE CO.
CHATTANOOGA • TENNESSEE

Mr. SAFETY ENGINEER: Mail coupon today



Two famous trademarks that identify the **FINEST, MOST COMFORTABLE AND HIGHLY STYLED**

STEEL TOE SAFETY SHOES

known to men in production—
COMPLETELY STITCHED WITH THREAD OF

DACRON*

*DU PONT POLYESTER FIBER



G-25. Brown, Two Eyelet Moccasin. Leather Soles—Rubber Heels. Full Cushion Insole, Dryseal Storm Welting.



G-26. Brown, Genuine Scotch Grain. Leather Soles—Rubber Heels. Dryseal Prestitched Double Deck Storm Welting.



G-40. Burgundy Blucher. Neoprene Cork Soles and Heels. Full Cushion Insole, Dryseal Storm Welting.



S-401. Brown Moccasin. Neo-Cord Soles and Heels. Popular All-purpose Oxford




S-403. Brown Overlay Moccasin. Neo-Crepe Soles and Heels. Slip and Oil Resistant. Tough, Pliable, Waterproof.



S-436. Burgundy Lace-to-Toe Blucher. 17 Iron Neo-Cord Soles and Heels. Genuine Rawhide Laces. Waterproof Storm Welting.

Yours for the asking...NEW COLORFUL CATALOG!

WRITE TODAY FOR "Safety Shoes for Every Job in Industry"



RECORD INDUSTRIAL COMPANY

Dept. S4, 3301 ARCH ST. • PHILADELPHIA 4, PA.

RECORD INDUSTRIAL COMPANY
Dept. S4, 3301 ARCH ST. • PHILA. 4, PA.
Please send me your NEW 1953
SAFETY SHOE CATALOG.

Name _____

Company _____

Address _____

City _____

State _____



Best-looking safety
we've ever built!

Just one of the 58 new styles • new constructions • improved protection
you'll find in this brand new 1953 catalog



Pick up your **FREE COPY** at

Booth No. 16 • Hotel Statler

New York Safety Conference • March 24th - 27th

shoe



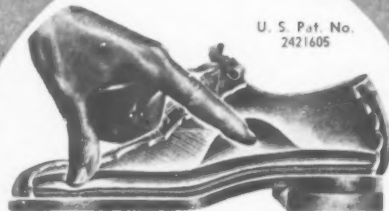
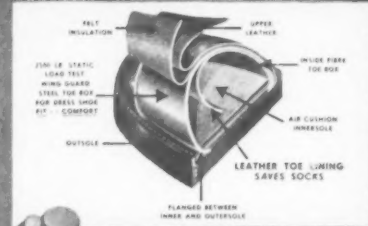
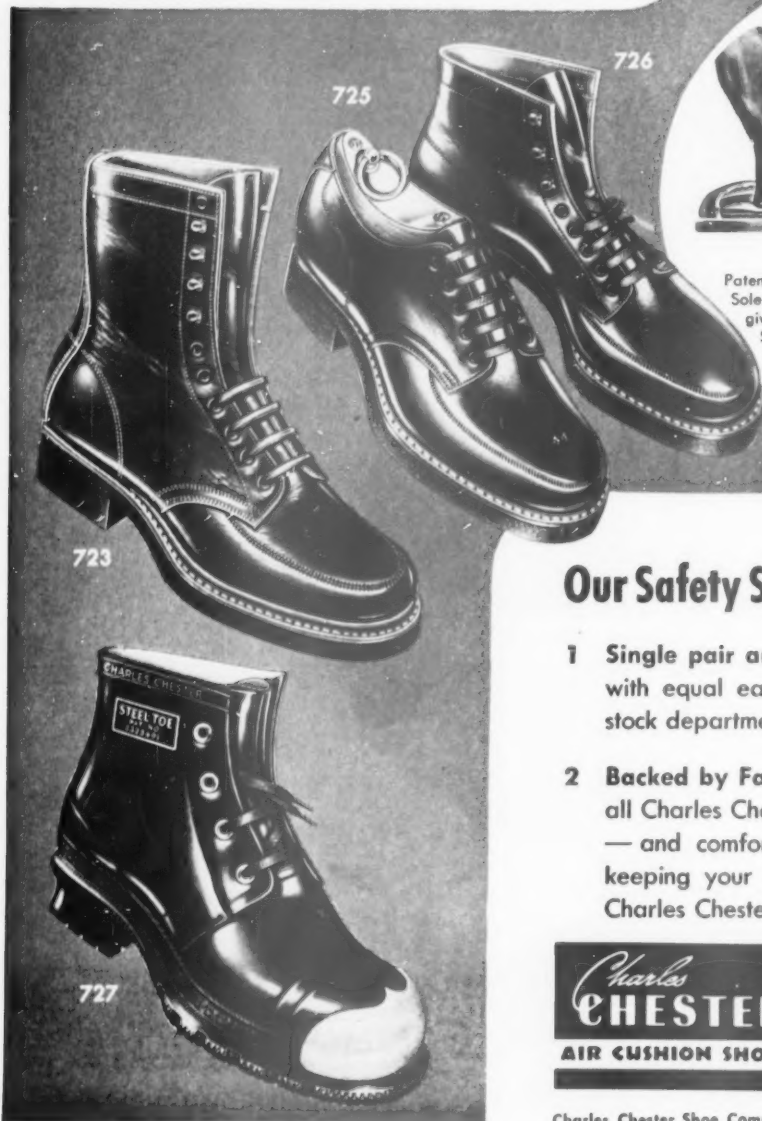
Stock No. 1613

LEHIGH
SAFETY SHOE COMPANY
ALLENTOWN, PA.

The CHARLES CHESTER—

Safety Shoe PLAN!

- ▶ No inventory headache
- ▶ Orders filled as needed from our large factory stock department



Patented Charles Chester Air Cushion Inner Sole is an exclusive feature designed to give daylong comfort. Charles Chester Shoes are made of the finest materials and craftsmanship.

Our Safety Shoe Plan works like this:

- 1 Single pair and bulk orders . . . both are shipped with equal ease and promptness from our Factory stock department.
- 2 Backed by Factory Guarantee . . . We guarantee all Charles Chester Air Cushion Shoes for fit — wear — and comfort. We accept full responsibility for keeping your employees satisfied when they wear Charles Chester Air Cushion Safety Shoes.



A copy of the Charles Chester Safety Shoe Plan will be sent to you on request.

Charles Chester Shoe Company, Brockton Mass. Fine Shoemakers Since 1876

National Safety News, March, 1953

Eye Protection

—From page 84

Melter's goggles of cobalt blue glass come in spectacle and cup types in graded shades. Lenses with color in the upper half and clear glass in the lower half are also obtainable.

Sun glasses do not qualify as ray-filter glasses for most industrial exposures. They are designed for protection against discomfort caused by sun glare. The better glasses conform to optical standards but many of the cheaper ones show considerable distortion.

Welding helmets provide protection for the eyes and face under the severe conditions of arc welding. They are attached to headgears so they can be raised for placing the work. Impact goggles worn under the helmet provide protection when the helmet is raised. Helmets are made of dielectric fiber resistant to sparks, molten metal and flying particles, and a poor conductor of heat. Replaceable cover glass protects filter plate.

Welding hand shields are used on operations where a helmet is not practical, and on tack welding, set-up work, inspection and time study work. Construction is similar to welding helmets.

Some helmets have a lift-front glass holder which permits rapid inspection of work without removing helmet.

Filter Lenses. The following shade numbers are listed in National Bureau of Standards Handbook H24:

No. 3—For protection against glare or reflected light, spot welding operations, light brazing.

No. 4 or No. 5—Light acetylene cutting and burning.

No. 6—General acetylene welding, or welder's helper or set up on arc welding.

No. 8—Heavy acetylene welding or cutting, or very light arc welding.

No. 10—Arc welding up to 250 amperes.

No. 12—Arc welding of more than 250 amperes, atomic hydrogen welding.

No. 14—Carbon arc welding.

—To page 121



Cleaning stations encourage workers to keep safety glasses and corrective spectacles clean. Some dispense cleaning fluid and absorbent tissues; other use silicone treated tissues.



REASONS WHY

TOP NOTCH

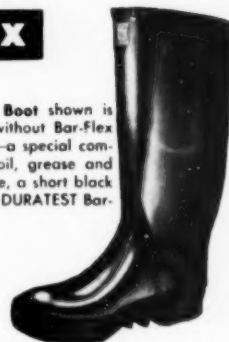
Industrial

FOOTWEAR IS BEST!

BAR-FLEX

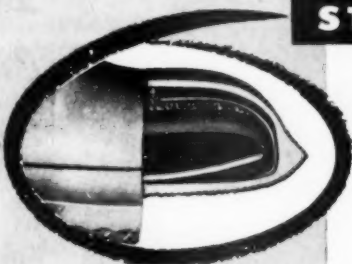


Patented outside arch and heel that adds to comfort and gives better traction.



Neoprene Oilace Boot shown is available with or without Bar-Flex feature. Neoprene—a special compound that resists oil, grease and acids. Also available, a short black industrial boot with DURATEST Bar-Flex outsole.

STEELTOE



Tested to withstand 2000 lbs. pressure. Here is genuine tested protection against toe injuries—the most common foot hazard to a worker!



Workin-6" all rubber work shoe with appearance of a leather shoe, DURATEST non-skid outsole, cushion insole. Steeltoe or plain. Also, a new Pullon work shoe, of similar construction.

DURATEST



A new "tougher" rubber compound that gives better resistance to abrasion resulting in longer wear. Tested for extra quality and durability — DURATEST.



Red Buddy Mankato—Work rubber with stretchy uppers and special design DURATEST outsole. Available in black. Also, red or black 2 buckle styles, regular or logger heels, and black storm or hicut pattern with gray outsoles.

BEACON FALLS RUBBER FOOTWEAR
BEACON FALLS, CONNECTICUT

SAFETY *with* COMFORT



STYLE K-51
BROWN OXFORD
Durable Oil-Resisting
Neoprene Soles
Stitched with DACRON*

STYLE K-52 Same with
Stout Leather Soles

IN STOCK for immediate delivery

Designed for SAFETY
Built for . . COMFORT
Styled for . . DRESS

. . . . that's the story behind
Knapp Aerotred Saf-Test Shoes

Knapp SAF-TEST Features

1. Original Aerotred Cushioned Innersole
2. Positive Longitudinal and Metatarsal Arch Support
3. Austempered Steel Toe Boxes with Complete Inside and Outside Insulation
4. Specially Designed Tempered Steel Shank — Extra Wide — Extra Thick
5. Smooth, Comfortable, Non-fraying, Genuine Leather Toe Lining
6. Specially Treated 10 oz. Duck Lining — Mildew and Sweat Resistant
7. Uppers Stitched with NYLON for Extra Durability
8. Soles Stitched with DACRON* that Resists Chemical, Solvents and Caustics
9. Complete Size Range from 5 to 14 — Widths A to EEE
10. 100% Union Made
11. Guaranteed Superior Knapp Quality and Workmanship

*Du Pont Trade-Mark

KNAPP
Aerotred Cushioned
SAF-TEST
STEEL-TOE SAFETY SHOES

For full information write W. M. Partridge, Jr.,
Saf-Test Dept., Knapp Brothers Shoe Mfg. Corp.,
Brockton 61, Massachusetts.

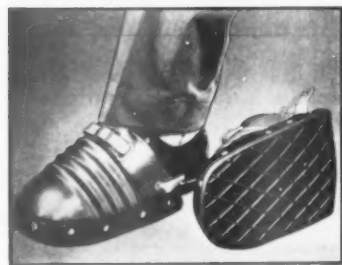
"SANKEY" FOOT GUARDS

"SANKEY" FOOT GUARDS consist essentially of a metal shield to be worn over the shoe whenever the foot is in danger of being either crushed or cut. The metal shield is designed to furnish a maximum amount of protection to the entire foot—not merely to the toes alone, but also to the instep—against hazards from falling, rolling or flying objects, or from accidental tool blows. Sankey guards are designed to withstand an impact of one hundred pounds dropped from a vertical height of three feet with a large factor of safety. They fit any shoe—no rights or lefts—and are furnished in widths of 4¾" (small), 5" (average), and 5½" (large).

THE SANKEY IMPROVED FOOT GUARD is light enough to be worn all day without discomfort or loss of efficiency. In order to keep the guard in its proper position on the foot, it is equipped with a rubber or steel toe clip, a steel cross bar, and a strap to which is attached a "quick fastening device." The guard is highly recommended where maximum protection is required. When ordering please designate whether rubber or steel toe clips are wanted. (The rubber is quiet and flexible; the steel is rigid, but has longer life on oily or hot surfaces.)



Improved Foot Guard



Full Sole Guard



"SANKEY" Foot-Shin Guard

No. 300 — No. 310 "SANKEY"
Shin Guard and Shin-Knee Guard

SANKEY IMPROVED GUARDS are furnished in aluminum alloy, and in two gauges and grades of steel. All will withstand the same impact.

No. 200—Aluminum Alloy (.083" thick).....16 oz. ea.
No. 500—20 Ga. Alloy Steel heat treated (.032" thick).....16 oz. ea.
No. 201—16 Ga. Carbon Steel (.059" thick).....25 oz. ea.

IMPROVED FOOT GUARD EQUIPPED WITH FULL SOLE instead of toe clip. These soles extend the entire length of the guard, are made of durable rubber, are flexible and comfortable. They have an anti-skid tread and a flange around the guard that prevents dirt and other substance from working up inside the guard, all of which add to the life of the wearer's shoes.

No. 202—Aluminum Alloy with full rubber sole.....22 oz. ea.
No. 502—20 Ga. Alloy Steel with full rubber sole.....22 oz. ea.
No. 102—16 Ga. Carbon Steel with full rubber sole.....31 oz. ea.

THE SANKEY COMBINATION FOOT AND SHIN GUARD consists of the Improved Foot Guard, but in addition has a Shin Guard of the same light but strong metal fastened to the foot guard. The fastening permits free action of the leg in any direction. The Shin Guard extends around the front of the leg through an arc of 180 degrees. It has an over-all height from the ground of 16¾ inches.

No. 400—Aluminum Alloy32 oz. ea.
No. 402—Aluminum Alloy with full sole.....38 oz. ea.

THE SANKEY FIBRE SHIN GUARD is formed to the contour of the leg, with three horizontal ribs for added strength and rigidity. Pads are fastened to the top and bottom of the inside of the guard. These pads provide comfort, and act as a shock-absorbing device. Guards, such as these, are worn by workers in industry subjected to shin hazards, and wherever leg protection is required. Absolute freedom of leg and foot action is assured with maximum protection to the shins. Each guard weighs 9 ounces, is 12" high, 5" wide at top and 3" wide at bottom. The use of this guard with the Improved Foot Guard also provides excellent shin and foot protection with full freedom of action in all directions.

No. 300—Fibre9 oz. ea.

THE SANKEY FIBRE KNEE-SHIN GUARD consists of a shin guard together with the added protection of a knee cap of the same light, strong material. The two so joined together as to provide flexibility. The guard is 18 inches high. Shin Guard section has same dimensions as No. 300. Knee Cap section is 5½ inches high and 6½ inches wide.

No. 310—Fibre19 oz. ea.

ELLWOOD SAFETY APPLIANCE COMPANY • 219 Sixth Street • Ellwood City, Penna.

REDUCE ACCIDENTS WITH...

GRO-CORD

a great family name!

NEO-CORD

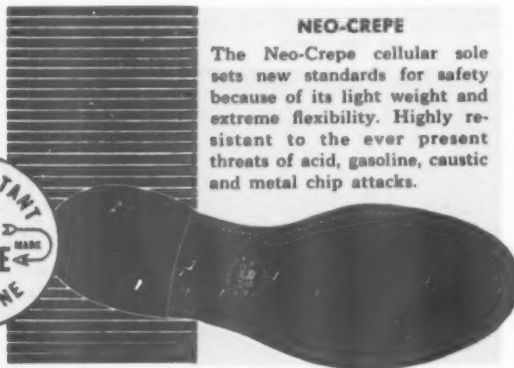
The Neo-Cord sole has a high non-slip quality. Widely used among safety men because of the cord and du Pont Neoprene construction. Resistant to gasoline, acids, caustics and heat — very resistant to metal chips.



We are the largest users of du Pont Neoprene in the sole and heel industry and make the only complete family of neoprene bottom stock for every industrial use.

NEO-CREPE

The Neo-Crepe cellular sole sets new standards for safety because of its light weight and extreme flexibility. Highly resistant to the ever present threats of acid, gasoline, caustic and metal chip attacks.



NEO-CORK

The Neo-Cork non-marking sole is one of the most popular soles incorporating du Pont Neoprene. Surprisingly non-slip characteristics under a great variety of working conditions.



No matter what the working conditions may be, there's a Gro-Cord sole and heel that has been specially designed to do the job.

For greater comfort and safety, always specify soles and heels made by Gro-Cord Rubber Co.—sold on better quality workshoes everywhere.

NEO-COMP

A good sole of du Pont Neoprene for general working conditions. It is strong, sturdy and provides a large measure of protection against acids, gasoline and similar threats.



GRO-CORD RUBBER CO.

LIMA, OHIO

Canadian Plant
GRO-CORD RUBBER CO. of CANADA LTD.
Tillsonburg, Ontario

Eye Protection

—From page 117

Goggles are available in shades up to No. 8; higher numbers in helmets.

Heat-treated cover lenses can be provided to protect filter lenses against pitting and scratching. Heat-treated filter lenses are also available.

Face Shields

Face shields of transparent plastic give eye and face protection on such jobs as metal sawing, working with chemicals, buffing, sanding, light grinding, bottle manufacturing, etc.

They should not be used for welding, heavy grinding or other operations where resistance to severe impact is necessary. Shields may be worn over spectacles.

Wire mesh screens are used for pouring low-melting point metals, as in babbitting. The mesh stops splashes of metal and allows better ventilation than a solid shield.

Sweatbands, worn across the forehead in hot, humid locations, help prevent fogging of goggles and spectacles.

Non-fogging compounds, applied to the lenses, help to keep the glass clear.

Hoods and Helmets

Hoods (loose-fitting) and helmets (rigid frame) of various types are worn to protect the face and head against hazards which do not involve heavy impact.

These are equipped with windows but goggles may be worn underneath. If toxic fumes, dusts or gases are encountered, an air line should be supplied. As these hoods are rather warm, an air line may also be desirable for comfort.

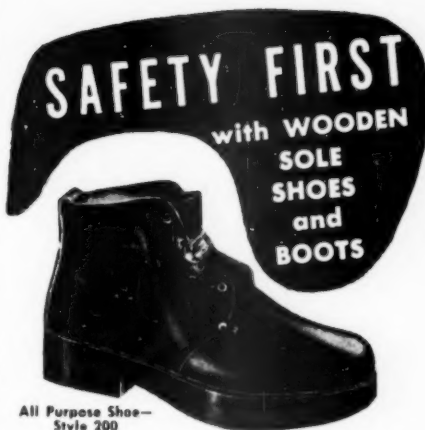
Fabric hoods protect the wearer from nuisance dusts, paint spray, etc.

Fire-resistant duck and asbestos hoods are used for varying degrees of exposure to heat, as in furnace and burning operations and fire fighting.

—To page 124



Fitting and adjusting safety goggles when issued and keeping them adjusted impresses the employee with the importance of eye protection. (Western Electric Co., Hawthorne Works)



All Purpose Shoe—Style 200



Steel Mill Shoe—Style 250



Chemical Plant Shoe—Style 1230



Oil Refiner's Shoe—Style 203



Foundry Man's Shoe—Style 202



Meat Packer's Shoe—Style 215



All-Purpose Leather Boot—Style 400



Hot-Foot Sandal—Fits over regular shoe



Shower Sandals—For Men and Women

Let us send you our complete catalog.

STAHMER SHOE CO.

Est. over 50 years

DAVENPORT 3, IOWA

**FOR SURE-GRIP TRACTION
ON SLIPPERY SURFACES . . .**

**FOR COMFORT ON HOT, COLD
OR WET FLOORS . . . USE**

SKIDMASTER

Skidmasters are non-skid sandals worn over the shoes to provide sure footing on slick surfaces, and insulate the feet against the discomfort of working on hot, cold or wet floors. Skidmasters stand up under rough usage. Steel mills, laundries, breweries, dairies, cold storage houses—hundreds of industrial users find them practical insurance against hazardous floor conditions.



Promote Safety in Your Plant—Write Today for Bulletin No. 588.

STANDARD SAFETY EQUIPMENT CO.

232 West Ontario Street, Chicago 10, Illinois

An Open Letter to You - Mr. Safety Engineer

SAFETY BOX TOE COMPANY

MANUFACTURERS OF



Steel Products for Shoes

812 STATLER OFFICE BUILDING
BOSTON 16, MASSACHUSETTS

Dear Mr. Safety Engineer:

You have the training and experience to correctly choose anything and everything that will improve your industrial personnel safety program. Any protective device that will either completely eliminate injury or drastically reduce it is extremely valuable to your objective. The WINGUARD safety toe is just such a device.

The margin of WINGUARDS' 45+% added strength will either save toes without as much as a bruise or lessen the effect of injury to toes that might otherwise be severely crushed. Through such performance WINGUARDS will improve your toe safety record and contribute to broader voluntary safety shoe acceptance in your plants. Thus, on the facts alone it should be your primary specification in your toe safety program.

Our emphasis on the superiority of WINGUARDS does not mean that we are attempting to sell them against other competitive straight back edge types. You see, with rare exception, we market just about all of both types of safety toes used on this continent. It is naturally our ambition to see every safety shoe containing the safest steel toe that science can produce. WINGUARD is that toe.

Very truly yours,
SAFETY BOX TOE COMPANY

Wirt G. Greenan

Wirt G. Greenan
Vice-President

W.G.Greenan/lmg

These Two
Safety
Work Shoes
are identical except—

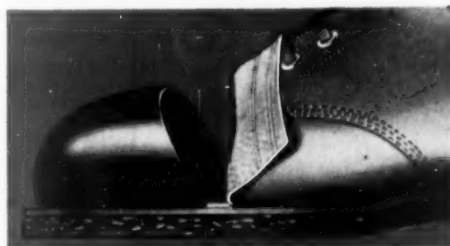


one is 45+% STRONGER

Your workers' toes will have 45+% more protection when you select the shoe on the lower right. This safety shoe contains WINGUARD 500 — the *safest* steel toe — designed to give maximum protection and comfort. WINGUARD safety steel toes were

recently subjected to both compression and impact testing by one of the country's leading metallurgical testing laboratories and conclusively proved to average 45+% stronger and safer than non-WINGUARD steel toes otherwise identical.

WINGUARD 500 — for the rough and tumble work shoes that have to fight back against heavy odds. Its wings — secret of its greater strength — brace the steel toe against rearward tilting under impact. Its added supporting surfaces resist outward spreading under critical pressure.



WINGUARDS SAFEST
STEEL BOX TOES

SAFETY BOX TOE COMPANY • 812 STATLER BUILDING • BOSTON 16, MASSACHUSETTS

**Vul-Cork
or
Vul-Cork
Neoprene
soles on a
safety shoe
convince
most safety
officials
that the
entire shoe
is quality
throughout.**

specify

**VUL-CORK
and
VUL-CORK
NEOPRENE
SAFETY SOLES**

Anti-Slip — won't pick up chips
... light, resilient, flexible.
Vul-Cork Neoprene resists oil,
grease, acids, hot metals.
Write for samples.

CAMBRIDGE RUBBER CO.
Vul-Cork Div., Taneytown, Md.
... makers of **Vul-Cork**

Eye Protection

—From page 121

Hoods and helmets of rubber, neoprene, plastic film, and fabric impregnated with rubber or plastic provide protection against sprays and splashes of acids, caustics, organic solvents, etc. Not all of these materials are resistant to all exposures and the manufacturer should be consulted.

Administering the Program

Supply and Distribution. In some companies the supply is kept in the main supply department. In larger plants a supply of goggles and repair parts may be kept in each shop.

Some operate goggle carts with trained attendants who make the rounds, cleaning, adjusting, repairing and replacing goggles on the job.

Fitting goggles. Prescription glasses should be fitted by a refractionist but fitting plano goggles also requires training and experience. Many optical companies offer instruction in this work. Unless goggles are fitted properly there will be opposition to eye protection.

Cleaning and sterilizing. Both goggles and spectacles become smudged and facilities for cleaning them on the job are desirable. Stations which dispense

cleaning liquid and tissues encourage frequent cleaning.

Goggles kept in stock and reissued to other employees should be cleaned and sterilized at frequent intervals. Goggles worn continuously by one person should receive the same care.

TO CONSERVE EYES

1. Make periodic surveys of work areas for eye hazards.
2. Provide type of protection suitable for the job — goggles, shields, masks, hoods, etc.
3. Make provision for corrective lenses for those who need them.
4. Provide goggle-adjusting service and encourage employees to keep their goggles in adjustment.
5. Be sure that all those in the work area have goggles, including employees from other departments.
6. Encourage employees to report foreign bodies in the eye immediately for medical treatment.
7. Supervisors should wear goggles for their own protection as well as to set an example to employees.
8. Insist on eye protection for visitors as well as for workers.

Comfortable, Low Cost Protection

STASAFE

TOE CLIPS

These heavy gauge steel caps are designed to protect the toes against injury caused by dropping heavy loads or sharp objects on the foot. Reinforced for greater resistance to impact, they offer lightweight, comfortable protection at an economical price.



Fits any square toed shoe. May be ordered with removable attachment for intermittent wear or fastened to the shoe permanently.

Write for Bulletin No. 585

STANDARD SAFETY EQUIPMENT COMPANY

232 West Ontario Street, Chicago 10, Illinois

A Head and an Eye Saved



Two employees of Esso Standard Oil Company's Bayway Refinery at Linden, N. J., are living examples of the wisdom of the company's providing personal protective equipment. Joseph Bianco (right) is holding in his hand a 5½-pound stud bolt that fell from a tower platform and struck his safety hat.

James Sergi (left) exhibits his cracked goggles which saved him from possible eye injury when a flying chunk of concrete struck his face.



ACME... the only Gas Mask with the "PICTURE WINDOWS"

You never have that "jammed-in" feeling, wearing the Acme Full-Vision Gas Mask. Its patented, larger lenses are like picture windows, giving you full natural vision for that safe, unconfined feeling. When you walk, you can actually see your toes without bobbing your head. This factor alone makes Acme outstanding among gas masks... well worth looking into.

Write for the complete story on Acme Gas Masks for all occupational hazards.

**ACME PROTECTION
EQUIPMENT COMPANY**

3037 West Lake Street, Chicago 12, Illinois

National Safety News, March, 1953

"This is our last costly shutdown because of breathing hazards



... Order some
Scott Air-Paks
and get those repair
jobs done in hours
instead of days"

Ed: Right! The man hours we've already lost would pay for a carload of SCOTT AIR-PAKS. We can't afford to slow up production any longer just because our maintenance men don't have efficient breathing equipment.

S.D: We certainly can't. It took too long to clear out the fumes so that our men could make the repairs in safety. If we had

SCOTT AIR-PAKS, our men could have gone into those fumes and finished the job in a few hours!

Ed: That's right... and our safety men tell me SCOTT AIR-PAKS can be put into operation on the double... plus the fact that they have the lowest operating cost of any breathing equipment.

S.D: How soon can we get SCOTT AIR-PAKS here so this won't happen again? We've got to maintain continuous production.

*Why not get on the phone or wire
Scott for the name of their nearest
Safety Equipment Distributor.*



SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

211 Erie Street

Lancaster, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 157 Chambers Street, New York 7, N. Y.

Safety Clothing

SAFE CLOTHING may be any type of clothing that is clean, in good repair and suitable for the job. Most garments offer some protection against minor hazards.

Safety clothing refers to specific garments designed for certain hazardous jobs where ordinary work clothes do not provide sufficient protection.

Proper fitting is essential in all work clothing. Long, loose sleeves and neckties may get caught in machinery. Trouser cuffs may cause tripping.

Clothing soaked in oil or flammable solvent is ignited easily. Both flammable and non-flammable solvents may cause skin irritation. Cleanliness is also an important aid to morale.

Laundered overalls, coveralls, aprons, smocks, and other garments are furnished by companies for occupations where extreme cleanliness is necessary because of the product or because of health-hazardous processes.

Exposures that require special protective garments include moisture, high temperatures, hot or corrosive substances, flying particles, sharp or rough edges, etc. See chart on page 3 for types of garments and materials for various hazards.

The following are essential in all types of work clothes:

1. Adequate protection.
2. Comfort and freedom of movement.
3. Durability.
4. Appearance.

Appearance of clothing is particularly important with women employees but men are not indifferent to it.

Standards. Specifications established by the Federal Government have provided wisely used standards for many years. During the war the American Standards Association approved a series of *War Standards for Protective Occupational Clothing—Series L18*. These are still the accepted standards.

These specifications cover protection against sparks, molten metal, infra-red and ultra-violet rays, and limited impact forces. Details of pattern, design,

workmanship and range of sizes are also included.

Protective Materials

Asbestos is the preferred material for protection against intense heat and flame. Many garments are made of this material, including complete suits for fire-fighting and rescue work.

Airplane crash fires have focused attention on protection for fire-fighters and rescue crews. These suits use not only insulating material against conductive heat but also a radiation barrier of reflective material, such as aluminum foil. Suits of this type have been developed by the U. S. Air Force.

Wool clothing should be worn under asbestos garments where intense heat is encountered.

Leather of various grades is used for protective garments. Chrome-tanned leather affords protection from sparks, molten metal splashes, and infra-red and ultra-violet rays. Leather, however, deteriorates under continued exposure to heat. For severe exposure, asbestos should be used.

Leather provides protection against limited impact. Padded leather or fabric aprons and hard fiber or metal protectors for the abdomen absorb much of the force of hard blows.

Leather reinforced by metal stitching or wire staples is resistant to cuts and abrasion.

Impervious materials of many types provide protection against dust, vapors, mists, moisture and corrosive liquids. They are useful in handling materials which would cause dermatitis or burns. This type of material includes rubber, neoprene and vinyl films and fabric coated with them.

Rubber is widely used because it resists acids, caustics and other corrosive substances. Garments of rubberized fabric are used when handling low concentrations of acids and non-caustic liquids and for protection against weather. Rubber's high dielectric



"I'm the feller you tried to sell a pair of safety shoes to last week. . . . Now I'll take a pair."

strength makes it useful for protective equipment where electricity is used.

Neoprene has numerous applications in safety equipment. It forms a tough, durable film resistant to oils, solvents, acids and alkalis. It has high dielectric strength.

Flame-resistant duck, a lightweight fabric, is quite strong and will outwear ordinary material used in work clothes. For protection against extreme heat, asbestos should be used.

Water-resistant duck is recommended in exposures to water and non-corrosive liquids. It combines strength and durability with light weight.

Vinyl plastic has many uses in safety equipment. For some garments the plastic is rolled or calendered onto fabric. For others the strong pliable film is used without backing.

Synthetic fabrics, such as dynel, orlon and vinyon, are used for durable work clothing. These fabrics resist acids, caustics, mildew, abrasion and tearing. They stand up well under repeated laundering.

Aluminized duck and drill are used for garments where radiated heat is a problem.

Flameproofing for cotton garments is desirable in some occupations. Newer flameproofing materials are said to withstand repeated launderings.

Welder's Clothing

Protective clothing is as much a part of the arc welder's equipment as the helmet and goggles. Cotton shirts and dungarees worn in warm weather can be ignited quite easily. The protection of chrome-tanned leather may avoid serious burns and loss of valuable time.

Welders' leather garments include overalls, pants, chaps, aprons, jackets, sleeves, gloves, mittens and spats.

Garments should be of good quality leather, solidly constructed. Fastenings must prevent gaping and should be so designed that the wearer can get out of the garment quickly. There should be no turned-up cuffs or other projections to catch hot metal. Pockets should be equipped with flaps.



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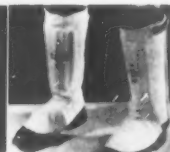
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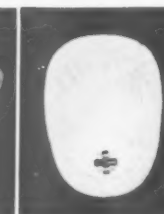
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Industry owes a vote of thanks to the American Mutual Liability Insurance Company for devoting an entire issue of their magazine to the subject — Women in Industry. Every Personnel Director and Safety Engineer should have a copy of this issue for his files; it contains a wealth of information.

Below is an excerpt from one of the more than twelve different problems covered.

The woman in industry without protective clothing is just as incomplete as the fighting man without his steel helmet and gas mask, or the baseball catcher without his face protector, chest and knee protectors, gloves, etc. Most progressive employers are alive to the merits of safe clothing but lack the program which is needed to analyze the places where safe clothing is required, procure the necessary safe clothing, and promote the use and overcome prejudices by educational means such as meetings of women to discuss why safe clothing is required and select proper type for the operations.

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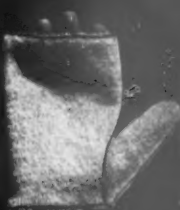
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Misfitted Shoes Are Frequent Fatigue Cause

In industry 65 per cent of men and 75 per cent of women suffer from foot ailments. Frequently misfitted shoes cause this pain and disability, according to Dr. O. N. Woolman, Dean, Northwestern Institute of Foot Surgery and Chiropody, writing in *Illinois Labor Bulletin*.

Comfortable and apparently correct shoes do the most harm in the majority of cases. Although the shoe may feel comfortable, it may be so constructed that it destroys the normal balance of the foot and abnormalities and afflictions result.

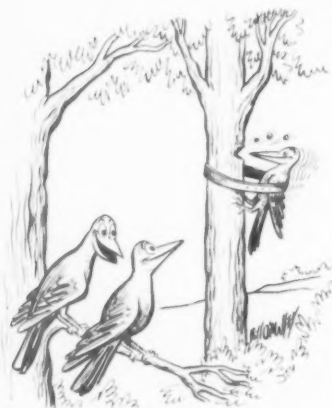
Short shoes are probably the worst offenders. Shoes that are fitted too short from the heel to the ball of the foot cause more distressing foot conditions than too narrow shoes.

Over 2,000 patients were permanently relieved from pains in the feet, legs, and back by wearing properly constructed shoes that were one to four sizes longer. These shoes provided proper distribution of body weight.

Shoe lasts that do not allow for normal foot movements within the shoe cause foot fatigue. The nearer we come to the movement of the bare foot the less foot troubles we have.

Foot fatigue is a prime factor in industrial and occupational fatigue allowances. In 1943 the National Association of Chiropodists completed a survey in 11 states, covering 1,203 concerns with 78,000 employees. Foot disorders caused loss of 2 to 7 work days per month for 7,940 workers. At least one work day a month was lost by 12,311 employees. Foot disabilities decreased the efficiency of 16,600 employees. No foot disorders were reported by 41,089 employees. Of the total number, 40,000 were men and 38,000 were women.

If more attention is given to foot abnormalities, ailments, hygiene, and to suitable industrial shoes, much of industrial worker fatigue would be eliminated. This would result in less employee absenteeism and a higher degree of working efficiency.



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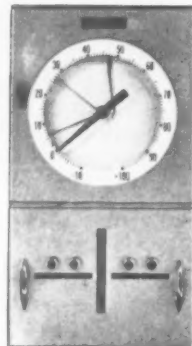
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**HOTEL STATLER
NEW YORK, N. Y.
MARCH 24-27**

Hands and Arms

FINGERS, hands and arms are involved in more than one-third of all reported industrial injuries. No parts of the body are more exposed to cuts, scratches, bruises, and burns in the course of the day's work.

Finger movement is necessary for practically all work and this makes protection difficult. For the forearm semi-rigid protectors are often practicable.

Finger stalls, gloves, mittens, and hand pads are made of a variety of materials to protect hands against cuts, abrasions and hot objects.

Some of the common materials and their uses are:

Canvas, the least expensive and least durable material, is satisfactory for light work. Duck and terry cloth are also used for handling objects which are not excessively hot.

A strong, closely woven variety of terry cloth is used for "hot mill" gloves.

Leather is more expensive and more durable for most jobs. It offers greater protection against cuts and abrasions.

Chrome leather is used where there is exposure to sparks or molten metal. However, no animal or vegetable material will stand continued excessive heat.

Metal staples in gloves, mittens and hand leathers give increased protection when handling sharp or rough objects. Metal-studded gloves should not be worn around electric apparatus.

Asbestos is used where hands must be protected against extreme heat, as in steel mills, heat treating plants, welding, galvanizing, glass manufacturing, etc.

Asbestos gloves may be obtained unlined or with wool lining for added comfort and protection.

Heat-repelling mittens of aluminum-coated fabric between two layers of asbestos, jersey lined, offer unusual protection against heat. These mittens are reversible.

Rubber, neoprene and vinyl films are suitable for chemical laboratories and plants where acids, and other corrosives are handled.

Neoprene and vinyl are particularly useful where petroleum products and some organic solvents are handled. Synthetic films vary in their resistance to chemicals and the manufacturer should be consulted about specific exposures.

Fabrics coated with rubber, neoprene or vinyl are used for light cleaning operations. They offer greater protection against abrasion than uncoated fabrics.

When rubber or synthetic gloves are worn for long periods, a lightweight cotton liner is desirable. If no liner is available, talcum powder should be shaken into the gloves before wearing.

Rubber and asbestos gloves should be long enough to come well above the wrists. Gauntlets should be equipped with locking devices to assure a snug fit about the wrists. Sleeves should be kept rolled down, leaving no skin exposed.

Metal mesh gloves are used in meat and other cutting. They should fit snugly.

Linemen's gloves. Rubber gloves worn by linemen and others engaged in electrical work are of a special type made to exacting specifications. They should be tested regularly and discarded when found worn, cracked or punctured.



Canvas, leather, rubber, neoprene, plastic and asbestos are among the materials used in making work gloves for industrial operations.

PROTECTION AGAINST CHEMICALS

Acids and Alkalies

When exposed to acids and alkalis, protect yourself by wearing the proper clothing.

1. If there is danger of spills from above, wear acid hood, rubber coveralls, gloves and boots. See picture.
2. Where minor splashing is the only hazard, wear goggles, rubber boots, rubber apron and gloves.
3. Tuck the glove gauntlets inside your sleeves.
4. Keep your trouser legs outside your boots.



Remember: The best of clothing is only partial protection. Complete safety depends upon how you handle the chemicals with which you work.



SAFETY INSTRUCTION CARD No. 42
National Safety Council
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For line work, overgloves of leather are worn to protect the rubber against damage.

Generally, gloves should not be worn when operating revolving machinery. An exception is buffing and polishing on high-speed lathes where parts become too hot to handle with bare hands.

Finger stalls may be used where a complete glove is not necessary. These are available in combinations of one or more fingers. Materials used are rubber, leather, plastics, duck, asbestos, and metal mesh.

Hand leathers, or hand pads, are often more satisfactory than gloves for protection from heat, abrasion or splinters. They can be made heavier and less flexible than gloves. They should not be worn around moving machinery.

Wrist and Arm. Gauntlets offer some protection to the wrist, and arm protectors guard the forearm against light blows. The materials, depending on the protection required, include duck, wool, leather, rubber, plastics, and asbestos.

Protective Creams

Creams are helpful in protecting the skin against many irritants when safety clothing is not practicable. These products are made in water-soluble and water-resistant types, each in several grades for differing exposures.

Water-soluble creams are used for protection against cutting oils, paints, lacquers, varnishes, etc.

Water-resisting applications are used where the cutting oil, cooling lubricant, or other irritant has a water content of more than 10 per cent. These can be removed with soap and warm water.

To be effective, coatings should be renewed frequently. They are not intended for protection against highly corrosive substances.


EVERYTHING
BULLARD
IN SAFETY

Safety Buyer's Guide

... for Greatest
Personal Protection
with Comfort

Hard Boiled Hat

Your choice of permanent molded colors, or a glow-in-the-dark phosphorescent model at small extra cost.




BULLARD SAFETY BELTS

Famous Morenci light weight design with extra safety margin. Continuous strand, super-twist webbing. No belt holes or grommets. Snub buckle. Adjustable keepers. Design adapted to belts for mining, construction, marine, petroleum and general industrial use; also in harness and saddle types. New brochure available.



DUST and SPRAY HOODS

Air supplied or respirator types. Feather-weight, tough, translucent material. Easy to clean. Full-vision, impact-resistant plastic face pieces are quickly replaceable. Airline Hood has non-fogging, no draft features; Cal. Div. Ind. Safety approved. Respirator hoods incorporate U.S.B.M. approved respirators. Other hoods approved for shot and sand-blasting; Acid Hood for safe acid handling.

Write for circular.

FIRST AID KITS

Cylindrical kit ideal for use indoors or out; mount on trucks, boats, poles, walls—wherever first aid kits are required. Compact, waterproof. Contains fabric Roll-up, complete with Unit Packets of first aid materials. Other kits include full line of weatherproof and bulk package kits, Pocket Packet and Combination Belt Kits.



Wouldn't you like to receive regularly the pocket-size publication, "What's New In Safety"? It gives highlights of new safety products. Just say "add my name to your mailing list."

DISTRIBUTORS IN PRINCIPAL CITIES

Write for detailed product literature or see your Bullard distributor or dealer

E. D. Bullard Company

275 EIGHTH STREET, SAN FRANCISCO 3, CALIF.

Lightest Weight Head Protection

The Cap with Safety Hat Features

Just 10 ounces of head protection supplies 40 foot-pounds impact resistance. The Bullard Hard Boiled "Shorty" Model is shaped like a cap, but offers protection to the ears and neck, like a hat. "Shorty" is the first of its kind in head protection.



Tempered aircraft grade aluminum is further strengthened by the ribbed crown which adds impact resistance to all Bullard Hard Boiled Hats and Caps.

Hammock-headband assemblies are interchangeable with all models, whether Fiberglass or Aluminum.

Comfort at Zero for Safety Hat Wearers



Safety hat wearers can now be comfortable at temperatures to zero and below. Hard Boiled winter liners are furnished in three styles: the knitted wool skaters type; the wool skull type; either of which may be used singly or in combination with the fabric windbreaker type for double protection.

The windbreaker fabric model fits all safety hats, has a downy interior and is protection for average cold weather. Knitted caps may be used separately, depending on weather protection needs.

E. D. BULLARD COMPANY

275 EIGHTH STREET, SAN FRANCISCO 3

*You'll Be Working On Air—
Walking On New
AIR CUSHIONED INNERSOLE "DRESSTEEL"
Safety First Shoes*



Man! What Comfort! Air cushioned innersoles of genuine FOAM LATEX with thousands of tiny air cells actually "breathing" to put a soft cushion of resilient, protective comfort under your every step.

**THREE SMART AIR CUSHION STYLES FOR
ON-THE-JOB OR DRESS**

A tan kip moccasin style . . . the fine tan scotch grain wing tip brogue oxford (shown here) and tan scotch grain plain toe oxfords. (All with Safety Steel Box Toes)



Just published! An entirely new Safety First Shoe catalog. All styles illustrated. FREE ON REQUEST!



*These Safety First Shoes
are UNION MADE



Safety First Shoe Company

27 WATER STREET, HOLLISTON 5, MASSACHUSETTS
THE PIONEER MANUFACTURERS OF SAFETY SHOES



CHECK THESE SAFETY FIRST EXTRAS!

1. Safety Steel Box Toe, felt-insulated for your comfort and extra protection.
2. Air-cushioned-innersoles of FOAM LATEX, heel-to-toe, covered with soft collagen.
3. Full leather lining, heel-to-toe, eliminates all excessive wear on socks.
4. Moulded metatarsal cushion for extra support.
5. Right and left quarter patterns for smooth, firm fitting of ankle and instep.
6. Tempered spring steel shank, ribbed for strength and resilience.
7. Top-quality uppers cut to patterns engineered by specialists for fit and comfort.
8. Sturdy soles of selected sole leather or Neolite.

ALSO GET
SAFETY FIRST
AIR CUSHIONS
IN WORKERS'
LACED-TO-TOE
STURDY
WORK SHOES

Bearfoot Neoprene Type "S" Crepe Soles

— proved the ideal safety soles

for every industry

WHAT IS NEOPRENE?

Neoprene—a synthetic rubber made from acetylene, sulfuric acid and salt—possesses remarkable characteristics that set it apart from natural rubber and other synthetics. Chief among its chemical properties are low combustibility and a high resistance to heat, oxidation, ozone, sunlight and oils.¹ Physical properties include a low slippage factor and a high resistance to abrasion, wear and cutting.

WHAT ARE ITS USES?

Because of these qualities a large part of Neoprene production is used for the insulation of electrical wiring and for gasoline and petroleum products hose. Now—in its improved Type "S" form—Neoprene is supplied by E. I. du Pont de Nemours & Co. and fabricated by Bearfoot using an exclusive process into the FIRST² practical sole made of this material—a sole that has revolutionized safety shoe service and comfort.

SLIPPAGE

Laboratory tests—made on many different flooring surfaces, both dry and coated with water, oil and other substances—prove that Type "S" Neoprene is usually measurably better than other types of soles for the prevention of slipping on inclined surfaces.³ Type "S" Neoprene has a squeegee effect that cuts slippage on wet surfaces.

OILS AND CHEMICALS

By its very chemical nature, Neoprene Type "S" is not subject to the usual deterioration from contact with oils, greases, most acids and industrial chemicals. Besides the safety factor involved, this characteristic results in remarkable long service life in fields where conventional soles deteriorate rapidly.

HEAT

Bearfoot Neoprene Type "S" Crepe Soles provide excellent insulation for the foot against high temperatures. In addition to this important protection for the wearer, Neoprene Type "S" does not break down under heat, again giving an indefinitely long service life in foundries, road-building and roofing work and other industries where high temperatures destroy shoe bottoms quickly.

ABRASION AND CUTTING

Under any conditions of use, Bearfoot Neoprene Type "S" Crepe Soles outwear all other soling materials known to us. The phenomenal resistance to abrasion of Type "S" Neoprene results in substantial money savings to buyers of work and safety shoes in fields where soles take a lot of punishment—the shoe upper will wear out before the sole is gone. No one really knows how long one of these "miracle" soles will wear, as no one to our knowledge has ever really worn one out. Also, through its high density and toughness, Type "S" Neoprene is highly resistant to cutting, giving extra protection and longer wear in industries where sharp grit and hot or cold metal chips cut ordinary soles to ribbons.

STYLE AND COMFORT

Along with their safety and long-wearing qualities, Bearfoot Neoprene Type "S" Crepe Soles add an extra bonus of comfort and eye-catching style to the shoe. Supplied in a variety of attractive colors, they maintain their shape and profile edge indefinitely, without spreading or deterioration. Fully flexible, they have a cushion effect that insures all-day foot comfort. Try Bearfoot Neoprene soles on the next safety shoes you buy and prove these points to yourself!

A TRUSTED NAME ON SHOE BOTTOMS SINCE 1924

THE BEARFOOT SOLE CO., INC.
WADSWORTH, OHIO

¹Synthetic Rubber, Recommendations of the President, Transmitted to the Congress, January 1950. Page 31.

²Letter from Rubber Chemicals Division, E. I. du Pont de Nemours & Co., dated January 23, 1952.

³Test made for Footwear Research Unit, Department of the Army, Office of the Quartermaster General, Washington, D. C. Copies available on request from The Bearfoot Sole Co., Inc.

**PROVED HIGHER
RESISTANCE TO**



SLIPPING

Neoprene offers three essential features:
Increased margin of safety against slipping accidents.

OIL, GREASE, CHEMICALS

Does not absorb, does not break down under attack of oils, greases, chemicals.



HEAT

Efficiently insulates foot against high temperatures, as in foundries and asphalt work. Does not deteriorate under heat.



WEAR

Under any conditions, the long-wearing sole was produced by The Bearfoot Sole Co. is proved in actual service where, made of pure Neoprene Type "S" Crepe Soles have outworn the uppers.



CUTTING

Stands up where sharp metal chips, hidden nail grit, etc. and the abrasive materials get conventional soles to ribbons.



revolutionary sole makes
 any safety shoes
 more
 protective foot!

Bearfoot

NEOPRENE TYPE "S" CREPE SOLES

These shoes are made with the Bearfoot
 sole as designed by S. L. Allen, The Bearfoot & Co.

amazing wear, amazing protection
 under the most
 punishing conditions

BEARFOOT
 NEOPRENE CREPE



**NOW AVAILABLE ON
 ALL FAMOUS BRAND
 SAFETY SHOES**

THE BEARFOOT SOLE CO., INC.

WADSWORTH, OHIO

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 J. H. Colvin, Manager

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 C. D. Gage, Manager

CHICAGO 1007 S. MICHIGAN STREET
 F. E. Allen, Manager

FOR SAFETY'S SAKE
**NEOPRENE COATED
WORK GLOVES**
FULLY CURVED FINGERS



#101

THIS POPULAR
KNITWRIST STYLE IS BUT
ONE OF SEVERAL
OFFERED BY GRANET.

THE

GRANET

CORP.

**RESISTANT TO OIL, GREASE,
CHEMICALS, SOLVENTS**

DIRT-PROOF AND WATER-PROOF

Increase your production — decrease your glove costs with Granet Neoprene-Coated work gloves . . . the fully curved finger gloves . . . scientifically designed for your Safety, Protection and Comfort. Completely water-proof and dirt-proof. Made to resist oil, grease, solvents and chemicals. *Granet* work gloves wear longer and fit better. *Granet* quality and durability are unsurpassed. Send for samples today and WEAR-TEST them yourself.

25 LORING DRIVE

FRAMINGHAM, MASSACHUSETTS

NEW

** Heavy-Duty* **GLOVES**



* Hood's new Heavy-Duty neoprene-coated gloves were designed especially for use in plants when heavy objects with sharp edges are handled.

They have an extra-heavy coating to give longer wear, yet, due to a unique process, they remain flexible.

Hood Heavy-Duty gloves *proved* their durability in on-the-job wear tests in a radiator factory—they were still usable after several pairs of ordinary gloves had worn out.

Hood makes a complete line of industrial rubber and plastic gloves. Write today for our new illustrated catalog featuring the Hood Glove Guide, which shows you "how to choose the RIGHT glove for EACH job".

Also available as
Model 7705, 12" gauntlet

HOOD RUBBER CO.,
Watertown, Mass.

The Quality that puts into

SAFETY



SAFETY APPAREL

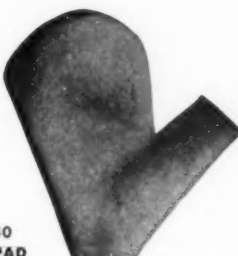
No. 14169
OPEN END
FINGER GUARD

Eliminate minor, but costly, finger injuries by using Steel-Grip finger guards on burring, grinding, buffing, sanding, assembly, machine and punch press operations. Choice of materials. Sizes for men and women. (U. S. Patents 2,351,906 and 2,461,872.)



No. 40
HAND PAD

Tough chrome leather; open back for coolness. Also made steel reinforced. Many styles of leather and asbestos hand pads for every job.



No. 660-4
GLOVE

Steel-Grip Chrome side split leather general purpose work glove. Steel sewn throughout—practically rip proof. Thumb patched and strapped for longer wear and protection. Choice of 2" or 4" cuff.



No. W3-9—WOVEN-GARD

"Woven-Gards" are hand protectors, mitts, pads, sleeves and aprons made of a long wearing woven cotton safety material. Provide flexibility, comfort, resistance to abrasion and cutting. Highly oil absorbent. Excellent for handling oily, slippery sheets. Porous weave makes them the finest protector for handling lower temperature jobs. Excellent protection at lowest cost.



No. 492—HALF JACKET

Chrome side split leather welder's half jacket. Also made in asbestos and flameproofed duck. Small, medium and large sizes. Extra large and jumbo on request. Complete line of welder's clothing, gloves and mittens.



No. 347—LEGGING

Chrome side split leather wrap around legging. Easy on—easy off. Also made in asbestos and flameproofed duck, as well as spring type design in all materials.



DYNEL CLOTHING

Dynel chemical resistant clothing. Coats, Pants, Shirts, Laboratory Coats and special designs to order. We manufacture a complete line of industrial safety clothing in your choice of leather, asbestos, flameproofed duck and Dynel.



No. 225-14
ASBESTOS GLOVE

Asbestos glove, 14" length. Underwriter's 2 1/2 lb. per sq. yd. asbestos with tough chrome side split leather reinforcement over entire palm, face of all fingers, well around small finger. Thumb seam entirely away from wearing zone. Full line of asbestos gloves and mittens, plain and leather reinforced. Your choice of lined or unlined, 11", 14" and 23" standard lengths. Special lengths on request.



STEEL-GRIP quality by Industrial is most important to you and has been for 43 years. Of all the manufacturers of Safety Apparel, Industrial Gloves Company has consistently and competently met the safety needs of all industry.

In this field, where defects in safety apparel quickly show up, users of Steel-Grip Safeguards have been consistently and amply protected by the quality of design, quality workmanship and quality materials that make up Steel-Grip quality. It is important to you that Industrial Gloves Company has such a record. You can rely on us to maintain this record.

Don't take less than Steel-Grip Quality by Industrial. Don't accept the appearance of safety for the fact—KNOW WHAT YOU ARE BUYING—insist on Steel-Grip by Industrial.

We manufacture a complete line of industrial safety apparel. Write for catalog.

INDUSTRIAL GLOVES COMPANY

A CORPORATION

1702 Garfield Street, Danville, Illinois
(In Canada: Safety Supply Co., Toronto)

Famous Industrial Safeguards Since 1910

Steel-Grip
INDUSTRIAL
Safety Apparel

*See you at New York
Safety Show - Booths Nos. 9 and 10*

EVEN
Sawyer

**NEVER MADE FINER
PROTECTIVE
CLOTHING THAN
THIS . . .**

It's Sawyer's absolute top quality and there's nothing else on the market that can beat it for



PROTECTION
ECONOMY
QUALITY
WEAR

\$54-40 apron with patch
\$54-30 apron without patch

100% WATERPROOF—made with top quality base fabric *saturation-coated* with 6 coats of genuine DuPont Neoprene Latex.*

ROTPROOF—not affected by grease, oil or gasoline. Highly resistant to acid solutions. *Positively will not blister, crack or peel.*

TOUGH AS MULE-HIDE — wears like iron, takes endless snagging, rubbing, scraping and still gives full protection.

Also: Complete industrial suit, three-quarter length coats, long coats and coveralls. All clothing made in black or yellow. Wide variety of styles and sizes.

*Sawyer fabrics are coated by The Brunse Company, a division of

**THE H.M. SAWYER
& SON CO.**

FROG BRAND

CAMBRIDGE
MASSACHUSETTS

No Time Wasted!

WHEN WORKERS WEAR

STASAFE

WINDSOCKS

The Safety Hat Liners
That Need No Installation

9" length \$2.64 Doz.

11" length \$3.00 Doz.



Windsock is a throw-away type head covering that's easy to use. Inexpensive—it actually costs less than the *time alone* spent by a worker in installing or in removing a permanent type liner. Warm, lightweight and snug-fitting, Windsock puts an end to those chilly drafts that whistle between the safety hat shell and cradle.

Write for Descriptive Bulletin No. 589

STANDARD SAFETY EQUIPMENT COMPANY

232 West Ontario Street, Chicago 10, Ill.

SAFETY EQUIPMENT FOR ALL INDUSTRIES

IPCO UTILITY RAIN SUIT



Absolutely waterproof and windproof . . . Patterned roomy to be worn over regular clothing.



The IPCO Utility Rain Suit consists of coat, pants and detachable hood. Double texture fabric with a sheet of solid rubber vulcanized in between assures waterproof qualities. Olive drab color.

Offers finest all-weather protection.

WRITE FOR BULLETIN NO. 14



Safety Equipment for all Industries

INDUSTRIAL PRODUCTS COMPANY

2850 N. FOURTH STREET • PHILADELPHIA 33, PA.

Recommended Practices in Eye Protection

A comprehensive analysis of all jobs, operations and processes should be made in each industrial plant to determine the eye hazards that exist and the proper type of eye protection which should be made available for employees to protect them against the particular hazard.

Issuing, fitting, servicing and maintaining of plano hardened glass eye protection should be done by persons trained for this work by a manufacturer's representative.

In plants where there is an eye protection program in effect, rules requiring the use of eye protection should be strictly enforced.

It is urged that the American Standard Safety Code for the Protection of Heads, Eyes and Respiratory Organs, Z2-1928, or existing government specifications such as the Federal Specification for Rubber Frame Goggles (GGG-G521), Federal Specification for Eyecup, Protective Impact Resisting Goggles (Chippers; Grinders; etc.) (GGG-G501b) and Navy Department Specification for Protective Goggles (Frames and Lenses); (Glare and Welders) 37G16, be used as guides in selecting eye protection equipment for specific applications.

Employers should furnish plano hardened glass eye-protection devices to employees free of charge.

Prescription Goggles

All employees should be given eye examinations by properly qualified physicians so that arrangements may be made to provide prescription hardened lens eye protection to those requiring it. Battery screening tests may be made by trained personnel using apparatus currently available so that only those employees requiring complete eye examinations need be referred to physicians.

The method selected for making prescription ground heat-treated glass eye-protection equipment available to employees should be given careful consideration by company executives.

The normal working distance (distance between the employee's eyes and the actual work point) should be taken into account when writing prescriptions for corrected hardened glass lens eye protection.

When corrected goggles are received, the lenses should be checked against the prescription and the goggles should be fitted to the employee's face by a professionally trained person.

Corrected hardened safety lenses should be supplied only in frames meeting the specifications of the American Standard Safety Code for the Protection of Heads, Eyes and Respiratory Organs, Z2-1928, or the specifications of other government agencies as noted previously.

The use of the "coverall" type of hardened plano glass eye protection devices or spectacles should be limited

GARDWELL Products

PERSONAL PROTECTION

.....Made from Recommended Materials



No. 760

... Gardwell
Underwriters Grade
Asbestos Suits.

Made from selected close woven Underwriters Grade Asbestos Cloth the jumper suit illustrated is reinforced with special chrome tanned heat resisting leather. Collars are of wool. Snap fasteners are used in front for safer, quicker removal. Seams are double sewn.



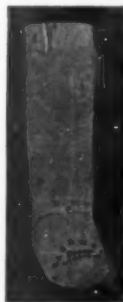
No. 1744

... Gardwell
Underwriters Grade
Asbestos Gloves.

Where heat and flame are the chief hazards asbestos clothing, gloves and mittens are supreme. GARDWELL asbestos clothing includes everything from a complete suit with helmet, gloves, coverall, etc. The glove illustrated has reinforced palm and thumb.

... Gardwell
Underwriters Grade
Leather.

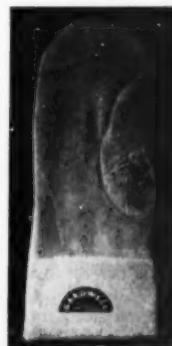
For rough service in protection from sand, steel shot, electric welding, etc. you can't beat GARDWELL leather leggings, welding jackets, sleeves, clothing, etc. The GARDWELL "FRANK" Knee Legging illustrated is a favorite in thousands of plants all over the country.



No. 500

... Gardwell
Underwriters Grade
Asbestos Mittens.

This special pair type mitten is 14" long. High grade chrome leather reinforcement on the palm and thumb extends about an inch onto the back thus reinforcing all seams. The reinforcement on the thumb also covers the back to protect the thumb seams. Has woolen lining, made large for quick removal.



No. 116

Also items from GARDWELL Ply-Garb, Oil-Chem, Canvas, Fireproofed Duck and Rubber—all made from highest quality materials, by expert workmen and backed by over 28 years experience. Send for Catalog.

Safety CLOTHING AND EQUIPMENT Co.
1990 EAST 69TH STREET CLEVELAND 3, OHIO
PHONE HENDERSON 2-0400

SINCE 1883
TANNERS OF
QUALITY LEATHERS

LICHTMAN
J.L.&S.
LEATHERS
NEWARK, N.J.

Reg. U.S. Pat. Office
J. LICHTMAN & SONS
NEWARK 15, N. J.

**For Best Results
INSIST ON
LICHTMAN
Heat Resistant
LEATHER
For Protective Clothing**

IT'S NONE OF *Your* BUSINESS!

but it's ours . . .

Why should YOU bother with work uniforms, shop towels—safety clothes? That's our business! The industrial launderer saves YOU money, energy and time through these services to industry:

UNIFORM RENTAL SERVICE

A whole wardrobe of work clothes is YOURS for the renting! They fit. They're safe!—no loose buttons, no dangerous tears—and they're scientifically cleaned and sterilized.

SAFETY CLOTHING

Do you need water, fire, static-PROOFED safety garments for your workers? Your industrial launderer rents safety clothing that's "custom-made for trouble!"

TOWEL SERVICE

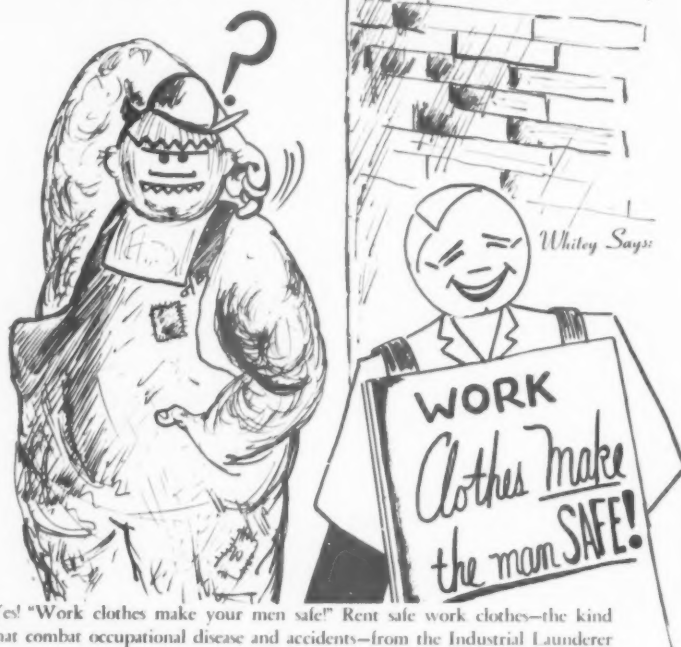
If you want sterilized shop towels of uniform size that combat occupational disease and shop accidents the Towel Rental Service is for you!



Write today for details of these and other rental services offered to industry by members of the:

**INSTITUTE of INDUSTRIAL
Launderers**
1627 K STREET, N. W.
WASHINGTON 6, D. C.

King Wrong and Whitey



Yes! "Work clothes make your men safe!" Rent safe work clothes—the kind that combat occupational disease and accidents—from the Industrial Launderer nearest you. For a few hints on how to Conquer King Wrong write to the:

INSTITUTE OF INDUSTRIAL LAUNDERERS

1627 K Street, N. W.

Washington, D. C.

...make gloves last
3 to 5 times LONGER!

BEFORE



LEATHER

RUBBER OR COTTON

How
Much Will
This Reduce
Your Yearly
GLOVE
Cost?



AFTER

THIS IS WHAT "WASH-RITE" DOES...

Throw all your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, COMPLETELY REPAIR, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. Write for literature.

10 Years of Proven Service

YOUR GOODS FULLY INSURED . . . WORK GUARANTEED

... it costs
you nothing
to find out.
SEND US A
FREE TRIAL
ORDER

Wash-Rite Company, Inc.

1412-26 CORNELL AVENUE · INDIANAPOLIS 2, INDIANA

to those employees whose work, according to the job analysis, makes it impractical to use a single type of corrected hardened lens eye protection. Their use is recommended for employees or plant visitors wearing corrected glasses whose exposure to the plant operation is only casual and of limited duration.

Training in Use of Respiratory Equipment

Respiratory equipment is often used under conditions of strain and excitement. Those who will have to use it should therefore be trained thoroughly. Regular inspection is also necessary to avoid deterioration of equipment which is seldom used.

The following items of training and maintenance are important:

1. Train each person in proper method of putting mask on and adjusting it rapidly to his face.
2. Have each person wear it long enough to become accustomed to the breathing resistance and to putting it on and taking it off.
3. Repeat training at regular intervals.
4. Set up a card for each mask to indicate date of latest inspection and replacement of canister and amount of use, if any, which canister has had.
5. Replace canisters at least annually, even if they have not been used.
6. When a canister is replaced, examine facepiece, harness, hose, and headbands for leaks or deterioration. Replace defective parts.
7. Canisters are ordinarily supplied with seals to keep out air until they are placed in service. Remove seals when canister is placed in service.
8. Store mask in a place accessible to hazardous area, and as cool and dry as possible.
9. If mask is for emergency use only, the canister should be replaced after each use.



"It's the office, dear, reminding you not to forget the notes for your safety talk."

For Greater Safety be sure it's "CHEM-TEX" APRONS and SLEEVES



FOR ALL AROUND
PROTECTION AGAINST
OILS, GREASES, ACIDS,
SOLVENTS, WATERS, ETC.

APPROVED BY INDUSTRY for their outstanding ability to protect against hazards. "CHEM-TEX" aprons are proving over and over again their greater safety value to management and workers. "CHEM-TEX" aprons have cut risks and increased production in thousands of plants. Their comfort, flexibility and proven protection are acclaimed by workers everywhere. And their long-lasting quality is another reason why management prefers "CHEM-TEX." Made in sizes and weights to meet your requirements.

The New KENNEDY "VICTORY" CAP SAFETY AT ITS BEST

Better protection for all the hair all the time because the full, wide, snood-type back of the new Kennedy "Victory" cap permits complete coverage. Easy to put on. Adjustable to all head sizes. Over 11 stock styles to choose from, plus styles made to your specifications.



Manufacturer of a complete line of asbestos and leather clothing. Everything for safer industrial production.

Special Clothing Made to Your Specifications

FOR SAFETY RELY ON KENNEDY

Write Dept. N-3-53
for complete information

Cap shown is Style No. 202-F. Gloves shown are made of finest synthetic rubber to offer protection against oils, acids, greases, chemicals, etc.

**V. E. KENNEDY-
INGALLS CO.**

3735 NORTH 35TH STREET
MILWAUKEE 16, WISCONSIN

LEADING MANUFACTURER OF SAFETY GARMENTS

HOLCOMB

PRODUCTS INCLUDE

GLOVES
SPATS
HELMETS
MITTENS
ARM

SLEEVES
HATS
PANTS
COATS
MASKS

FOUNDRY
LEGGINGS
FOUNDRY
BLANKETS
FINGER

JUMPER
SUITS
OVERSHOES
CURTAINS
KNEE PADS
HAND PADS

PROTECTORS

APRONS

PROTECTORS

MADE IN ASBESTOS—LEATHER—FIREPROOFED DUCK

HOLCOMB SAFETY GARMENT CO.

118 North Jefferson Street

Chicago 6, Illinois

Plasti-Guard

"FORMULA M"

Industrial Aprons



The New "Formula M" Industrial Apron Protects 100% Against ANIMAL FAT AND SALT!!!!

It is the only vinyl plastic apron that will stand up under the influence of ANIMAL FAT and its derivatives, as soap, cutting oils mixed with soap, etc., in addition to the standard resistancy to water, oil, grease, acids, alkalies, etc. It will not crack or peel and may be cleaned with a damp cloth or soap and water.

"Formula M" aprons are equipped with dielectrically welded all plastic eyelets, rayon tubing ties and are individually packed in attractive tubes.

"FORMULA M" PLASTI-GUARD APRONS WILL PROTECT WHERE OTHER APRONS FAIL

Protective Sleeves now also available in "Formula M" vinyl plastic.

Sold through leading Supply Houses. If not available in your territory write to us for literature and samples.

Erell

Manufacturing Company
1243-45 S. WABASH AVE.
CHICAGO 5, ILLINOIS

Advance work gloves fit the job!

SWING THUMB No. 3062 WELDER'S GLOVE

No. 2396A STEEL REINFORCED LEATHER GAUNTLET

No. 1250 ASBESTOS GLOVE

Whatever the job, there's an Advance glove to fit the need. Advance gloves are recognized by industry and worker alike as the superior work glove because they are designed for specific job applications.

High quality materials, exacting workmanship and Advance mass-production techniques insure you of a product that you can depend on for quality and wearability at low cost.

Three styles of these economical, longer wearing gloves are shown above. For the complete story on the Advance line of work gloves and safety clothing for all industries, write today for the latest catalogue.



"A better work glove for every purpose"

ADVANCE
GLOVE MANUFACTURING CO.

902 W. Lafayette Blvd.
Detroit 26, Mich.

You play it **SAFE** with these **BASCO PRODUCTS!**

Flame Resistant { Aprons
Sleeves
Welders' Curtains
Gloves

Acid Resistant { DuPont Neoprene
Aprons

SWEAT BANDS

Patented pressed cotton—highly absorbent—that prevents perspiration from dropping into eyes or on eyeglasses. Saves accidents. Disposable. **FREE SAMPLE.**

HAND PADS

For steel handlers. Won't slip. Long wearing. **FREE SAMPLE.**

Write for information and prices.

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Completely surrounds the wire with a thick wall of rubber having high dielectric strength. Locks itself in place but is easy to apply or remove.

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Lengths: 3', 4 1/2', 6'.

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Used in conjunction with Line Hose to cover conductors as they pass over insulators. Inward extending flanges prevent accidental dislodgement. Compact construction. Convenient to handle.

CONNECTOR-END LINE HOSE



Standard Line Hose with built-on connector-end for joining to additional lengths or for covering enlarged wire taps, leads on stud type transformers, etc. Sizes same as standard line hose.

LINEMEN'S RUBBER BLANKETS



Indispensable for covering odd shaped equipment. Made of best grade rubber with long-life and high dielectric qualities. Sizes 36"x36" and 36"x27". Also available with "Snap-Button" and eye-lets.

SNAP-BUTTON RUBBER JACKETS



Highest quality small size rubber blanket, 22"x22", equipped with Salisbury hard rubber button fasteners and used to cover dead ends or other similar hazards that require securely fastened protection.

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Protect the arms and shoulders from accidental contact with "hot" equipment. Held in place by adjustable rubber strap across the shoulders. Made in chromium plated molds to insure high voltage resistance, smooth surface and long life. Regular and extra large sizes.

NON-SPILLABLE P. B. COMPOUND POTS

Provide a safe and convenient means to carry insulating point and brush. Being made of semi-hard synthetic rubber, they are non-conducting, non-breakable and are unaffected by the usual P. B. compound used.



LINEMEN'S GLOVE BAGS



Necessary for glove protection in storage and transportation and useful, when properly labeled, for personal identification. Made of heavy waterproof duck, sturdy and durable. Snap hook and "D" ring attached. Size 8" wide, 15" long.

LINEMEN'S RUBBER GLOVES

Best grade steam-cured gloves, carefully made to meet all standard specifications. Furnished in curved or straight finger style. Standard gloves are rated at 10,000 volts, 14", 16", 18", 20", 22", 24", 26", 28", 30", 32", 34", 36", 38", 40", 42", 44", 46", 48", 50", 52", 54", 56", 58", 60", 62", 64", 66", 68", 70", 72", 74", 76", 78", 80", 82", 84", 86", 88", 90", 92", 94", 96", 98", 100".

Lengths: 15,000 or 20,000 volt gloves are available. All sizes and half sizes from 9 to 12.



RUBBERCUFF PROTECTOR GLOVES

Similar to our standard all-leather protector glove with the addition of a full-length molded rubber cuff. Rubber cuffs do not increase current creepage to the forearm. They prevent costly snags in gauntlets of linemen's rubber gloves which are required to extend beyond ordinary leather protectors. Furnished in several sizes to fit perfectly over rubber gloves.



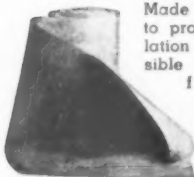
ALL-LEATHER PROTECTOR GLOVES



Worn over rubber gloves to protect them from injury. Made of specially tanned Grade "A" buffed horsehide and carefully designed to fit perfectly over rubber gloves. Soft and pliable under all conditions. Do not become slippery when wet. Band-top or gauntlet styles. All sizes.

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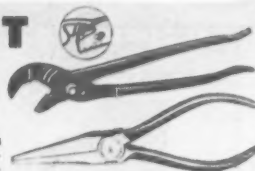
Semi-Floating Safety Tool Belt—20 Styles—Full Range of Sizes. Stock.



Tool Belt with or without holster with tape sling, hammer loop, snap. Stock.



Tool Buckets—Canvas, fibre top, leather bottom 12"—16" Depth. Stock.



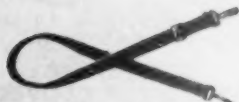
Chan-Nel-lock gripping tongue and groove Pliers. Stock.



Chippewa Boot—6 to 11 and 12 with 16" top. With or without Padding. Stock.



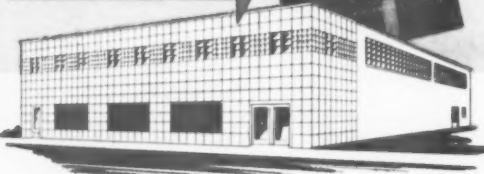
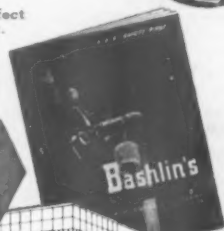
Vacuum Grip Pliers perfect balance easy cutting. Stock.



Safety Straps—24 Styles Finest Leather, Bashlin Craftsmanship. Stock.



Clear Grip—Ease E Grip Plier Handles. 9"—8"—7"—6"—420 Pliers. Stock



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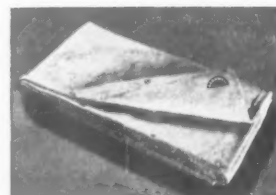
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Linemen's ultra-flexible safety straps and climber straps. Rot proof and moisture proof canvas and web products. Write for details!

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CHECK DERMATITIS BEFORE IT STARTS...

with **PRACTI-KREME**

Skin Protector
and Cleaner



Practi-Kreme is not slippery on the hands, does not chap or roughen skin, and does not affect nail polish.

It is supplied in 8 and 16 fl. oz. jars and 1 and 6 gal. cans.

Write for test samples and free literature.

Skin cleanliness is the most important single factor in preventing dermatitis outbreaks. Practi-Kreme helps achieve this condition in two ways. Applied before exposure it provides a flexible, fat-based coating over the skin which excludes paints, solvents, resins, dusts and other non-water based irritants. Then, moistened and rubbed to a lather after work, Practi-Kreme cleans with a penetrating suds that gets soil out of deep pores, leaves nothing to irritate on the skin surface.

Leaders of American industry have depended on Practi-Kreme for fifteen years to guard workers' skin, thus helping to prevent wasteful absenteeism and costly compensation claims.

New NEUTRAL PHLO®
pleases women workers

Smooth-flowing, creamy white PHLO is the low pH skin protector for workers not requiring the double-duty cleansing action of Practi-Kreme. PHLO just as effectively bars bacteria, irritants and soil, puts an invisible glove on the hand — yet is easily removed with ordinary soap and water.

Handy personal-size tube is convenient to dispense, but PHLO is also available in 8 and 16 fl. oz. jars for even greater economy.

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Safety engineers recognize the importance of quality on hazardous jobs. When it comes to equipment on which life depends—safety straps and belts, climbers and grips, pliers and tools—there can be no compromise with quality.

Nearly a century of experience is back of Klein equipment for linemen and electricians. Today the name Klein is recognized for highest quality wherever such equipment is used. When life is at stake, only *the best is good enough*. In tools and equipment, this best is Kleins—“since 1857.”

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If you have not received a copy of the new Klein Pocket Tool Guide, write for one. It will be sent without obligation.



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Conference on Basic Odor Research

A two-day conference on “Basic Odor Research Correlation,” under the joint sponsorship of the American Society of Heating and Ventilating Engineers and The New York Academy of Sciences, will be held April 23 and 24, at the Barbizon-Plaza Hotel, New York.

The “odor problem” is of serious concern to chemists, physicists, experimental psychologists, as well as to industrial scientists working in the fields of cosmetics, tobacco, food, and the manufacture and transportation of chemical products. In arranging this conference, the American Society of Heating and Ventilating Engineers and The New York Academy of Sciences will bring together the outstanding investigators in academic and industrial laboratories, working in these fields to explore jointly the present status and recent developments, with the hope that a full exchange of knowledge and opinions with their colleagues in allied fields will benefit all these concerned with the basic odor problem.

The American Society of Heating and Ventilating Engineers has directed extensive research to the problem of odors in air-conditioned spaces. They report that conditioned air, far from being “free,” is costly to the degree that energy has been devoted to its heating, cooling and cleaning, and hence must be conserved as far as possible in the interests of economy.

They state that when conditioned air is recirculated within an occupied space, it takes up odors from people, furnishings, foods, tobacco and other substances; and questions relating to the perception of such odors, the effects of environmental factors on their intensity, and methods for their control are of fundamental interest to the air-conditioning, heating, refrigeration, and ventilating industries.

Fire-Safe Construction

Fire-resistant construction is important for all industrial and commercial buildings. Some construction can come through a fire with only minor structural damage. It should at least be non-combustible, even though it might be damaged by heat.

For non-hazardous occupancies heavy plank roofs and floors are considered satisfactory. Heavy timbers are slow burning.

Wooden walls, joisted quick-burning floors and roofs, and inaccessible combustible spaces should be avoided.

Hazardous processes should be cut off by fire walls or fire-resistant partitions. If hazards are particularly severe they should be housed in separate buildings.

Explosion hazards require explosion-relieving windows or other means of relieving pressures to minimize structural damage.

If building or contents are combustible, large areas can be subdivided by fire walls, with openings protected



B R E C K

FOUR WAYS TO PROTECT SKIN FROM INDUSTRIAL DERMATITIS

BRECK pH7 PROTECTIVE CREAM protects the hands against irritants such as lubricating oils, cutting compounds, tar, greases, rubber dust, aromatic and hydrocarbon solvents, fiberglass, paint and iron dust. It forms a non-sticky, invisible film over the skin. Breck pH7 Protective Cream is easily applied. It is easily removed with Breck Hand Cleaner or soap and water.

BRECK WATER RESISTANT CREAM protects the skin against the action of water and water solutions such as liquid coolants, emulsified cutting oils, mist and spray from alkali baths and plating solutions, cement and lime. It covers the skin with a light, protective film which is not slippery or sticky. Breck Water Resistant Cream has a pH value of 8.

BRECK HAND CLEANER helps eliminate the use of harsh, gritty, highly alkaline or defatting hand cleaners. It does a thorough cleansing job, yet is mild and non-irritating to the skin.

BRECK WORK CREAM is used after exposure to degreasing materials and at the end of a day's work. It substitutes fatty materials for the natural skin oils which have been removed. In this way Breck Work Cream helps keep the hands smooth, pliable and lubricated.

A Breck Industrial Preparations Booklet



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**Dermatitis Costs Industry
\$100,000,000 Per Year**
yet its answer is as simple as this

Where irritation and defatting of the skin occur from frequent contact with solvents, oils, chemicals, dust, paint spray, etc. . . SKIN-COTE Creams provide an invisible film over the skin, setting up a barrier to the irritant material . . . Also important to you, is the fact that SKIN-COTE Creams are superfatted with U. S. P. grade oils and lanolin, to help restore any loss of the natural skin oils and fats . . . As a result skin remains fresh, vibrant and alive—you will find that the answer to Industrial Dermatitis is just as simple as this . . . Send for our Application Chart—it is helpful in analyzing any problem of this nature . . . also indicate if you want our 144 page catalog titled: "Everything for Safety."

The BOYER-CAMPBELL Company
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by fire doors. This will help to limit damage in a single fire.

When important buildings have combustible roofs and floors they should be separated by as much yard space as possible.

For buildings of more than one story, stairs, elevator wells, conveyors and chutes should be enclosed with fire-resistant walls. Fire doors should be installed at openings to prevent spread of fire to other floors.

Blank walls, fire shutters, or wired glass windows offer protection against exposure fires. Open sprinklers are an additional safeguard.

Waterproof floors with adequate drainage should be provided if lower stories contain valuable stock or machinery susceptible to water damage. Tarpaulins should be kept on hand to prevent water damage.

Main roofs should be anchored to resist wind damage.

Fire-resisting vaults should be provided for the protection of business records and valuable drawings. Civil defense measures might suggest the desirability of storing vital records at some point remote from industrial centers.

When construction work is in progress, good housekeeping should be practiced and temporary fire protection provided. Salamanders and welding and cutting sparks must be watched.

Automatic detection and sprinkler systems are needed for combustible construction or occupancy.

Paper Containers Carry Safety Thoughts

Among the new media for spreading safety messages through slogans and other reminders are various types of paper products, whose primary purposes involve other utilitarian values.

Paper beverage cups bearing safety reminders, for instance, are now being produced by several companies for sale to plant canteens and cafeterias and to industrial caterers. These often carry the Green Cross symbol for its significant attention value, and carry such slogans as "Work Safely Today," "The Best Safety Device Is a Careful Worker," "Have All Injuries Reported Promptly," etc.

Plant feeding departments also have been found good customers for paper napkins printed with such messages as "Wear Your Goggles Today—You'll See Tomorrow," or "Keep Your Eye On the Ball—There's No Way to Make This Plant Safe for the Careless Worker," and others.

One company makes a pressure-sensitive tape imprinted with a safety slogan.

National Safety Council files include samples of grocery bags imprinted with safety messages, and there's a butcher wrap serving a similar purpose.

Council officials have welcomed this trend to secondary application of products to promote safety, and offer all possible assistance to manufacturers who seek slogans and the like for such use.

Protection Against Wind

No section of the country is immune to damage from windstorms, nor is the menace limited to any season. Tornadoes, cyclones and hurricanes are more frequent in the milder months while destructive blizzards cause heavy damage in the northern sections during winter.

Roof coverings, copings and flashings are especially vulnerable to wind damage. In addition, outside structures such as stacks, ventilators, canopies, signs and cranes should be designed and anchored to resist wind, and good maintenance should be provided.

Wood and steel-deck roofs need special anchorage to resist lifting by strong winds. Standard roof anchorage is designed to resist gust velocities of 90 m.p.h. In most cases this will protect against minor tornadic storms and reduce the extent of damage outside the vortex of a severe tornado.

The vortex of a tornado rarely strikes a plant but there are many storms severe enough to tear off outside structures and plank-on-timber of joisted roofs that are not anchored on. Such forces are encountered in severe gales and thunder squalls as well as in minor tornadoes and in zones on the edges of the vortex of a major tornado.

How Plastics Aid Safety

At the close of World War II, there were many fanciful stories about how plastics were going to revolutionize modern living. While many of the prophecies are still to be fulfilled, plastics are filling an increasingly important role in industry and in the home. Their contributions to safety are particularly important.

Plastics have been used in industry for many years. They have done a good job combating hazards from chemicals, falling objects, dust, gas, fumes, and many other causes.

One of the early reasons for the use of plastics in safety was the necessity—still with us—for finding materials resistant to deteriorating agents. An increasingly important reason for the widening employment of plastics in equipment where complete protection is essential lies in the fact that the plastic that will do the protective job most efficiently can be selected from among hundreds of compounds—from neoprene to bone-hard types.

Natural materials ordinarily offer limited resistance. Rubber does not stand up well to oils, acids, sunlight, etc., and prolonged wear next to the skin may produce toxic effects. Untreated fabrics are flammable and readily affected by acid. Wood is subject to rot, swelling or shrinking from excess or deficiency of moisture, fire, and when wet is a dangerous conductor of electricity. Ferrous metals rust, offer no resistance to the passage of electricity, and are relatively heavy.

Protection from specific dangers, as certain types of acids, is not possible

PROTECTS HANDS AGAINST OIL, GREASE, GRIME, PAINT



Saves Job Time

**Du Pont "PRO-TEK" acts like
an invisible work glove**

Protect workers' hands—reduce time costs with Du Pont "PRO-TEK." This hand cream shields the skin against grease, grime, paint and insoluble cutting oils. It's easily rubbed on hands and arms by workers before starting the job. At wash-up time, "PRO-TEK" washes off quickly, cleanly with plain water—takes all the grime along. It saves job time . . . maintains production efficiency . . . and boosts morale.

Contact your supplier now for Du Pont "PRO-TEK." Or write to E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.



PRO-TEK

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HAND PROTECTIVE CREAM



NON-TOXIC SKIN CREAM

acts in **3** ways at once -

PROTECTION ✓
PREVENTION ✓
ALLEVIATION ✓



Used successfully for a number of years in all types of industries for skin protection of workers. **PROTECTION** against irritating and drying materials. **ASTERMA'S** lubricating action is effective in the removal of inks, paints, dyes, dirt, grime grease, oils, aids in preventing skin-disorders by keeping skin clean and soft.

In constant use in Industrial Hospitals for a number of years for First Aid, all types of burns, cuts, bruises, etc. Recommended and prescribed by Physicians and Skin Specialists.

Some choice territories open for distributors.
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Proper protection and comfortable fit go hand in glove with Stanzails to boost your workers' efficiency and send your company's profits soaring! Work stoppage and injury claims decrease . . . medical expenses decline . . . employee relations improve and production increases—when you order the right liquid tight acid and oil resistant neoprene Stanzail gloves for each job. Choice of 32 long-lasting styles, weights, sizes, colors . . . write for PIONEER Stanzail catalog today.

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Quality Gloves for 35 Years

Costs Come Down

N-32 medium weight straight finger style neoprene glove. Non-slip grip surface. 10½" length.




with any natural substance. It is, however, usually possible to compound a plastic that will successfully resist any particular hazard. Compounds can be made impervious to oils and acids, highly resistant to breakage from shock or pressure, completely non-conducting, heat and cold proof; and it is often possible to combine several of these qualities in one compound.

These products can be rendered non-toxic and odorless, and can be molded to exceptionally close tolerances, reducing production difficulties and lowering expense.

Articles of safety equipment in which plastics have been employed to perform a particular job, to name a few, are: transparent eye and face shields, chemical-proof garments of plastic-coated fabric for the hands, arms, body and head; respirators; gas and dust masks, containers for various aid kits; lancets, syringes and other devices used in first aid treatment.

New materials developed during and since the war are becoming available for use in safety equipment. Low-cost equipment designed to resist almost any industrial hazard will do an even better job of protecting workers from potentially dangerous materials and processes.

Precautions with Salamanders

Salamanders are widely used by construction workers and by maintenance men working in unheated areas. Where plastering, brick-laying or concrete work is carried on, these units are used to dry out the materials as well as to provide warmth for the workers.

If a salamander is used near combustible materials there is danger of ignition from flame and sparks. In confined or unventilated spaces dangerous quantities of gas may be liberated.

Salamanders should not be set on wood floors or on combustible supports. They should rest on beds of earth, sand or ashes at least three inches thick, or on heavy metal plates insulated from the floor.

Charcoal or coke are the best fuels. They burn cleanly and brightly and give off a minimum of gas which can be exhausted to the outside. If coal must be used, it should be kept burning brightly to reduce generation of gas.

If a workman must enter a confined area which cannot be readily ventilated, atmospheric tests should be made where salamanders are in use. Standard carbon monoxide indicators are used.

Combustible clothing is hazardous when worn around salamanders, particularly if garments are oil-soaked.

Soda-acid or foam extinguishers, water buckets or other efficient means of extinguishment should be kept handy. Fires in salamanders should never be left unwatched.



EMALFON*

New Insulated Mitten with Asbestos Cover

Here is the ideal mitten for use on extra hot jobs. It consists of a standard EMALFON mitten with an asbestos cover which is easily replaced. This flexible, long-wearing mitten is made from three thicknesses of material: outer layer of terry cloth, treated to make it flame-resistant; inner layer of all-wool fabric for added insulation; and third layer of soft, fleeced cotton. Both the mitten and the asbestos cover are reversible so they can be worn on either hand.

If not available from your safety equipment dealer, write us for information and prices. Ask for literature on our complete line of safety gloves.

*Trade Mark Reg. U. S. Pat. Off.

WORK GLOVES THAT "SING"

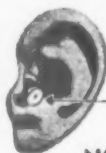


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NEW DEVICE PROTECTS HEARING SCIENTIFICALLY

Lee Sonic EAR-VALV



Admits conversational tones while automatically controlling harmful noises before they enter the ear canal.

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REPERCUSSION Valve moves to opposite seat by repercuSSION or vacuum then goes back to center

HEAR DESPITE NOISE

- IN EFFECT, A PROTECTIVE EAR DRUM
- STOPS HARMFUL EFFECT OF NOISE
- FITS COMFORTABLY INTO EAR CANAL
- LEAVES EAR CANAL OPEN
- THE ANSWER TO INDUSTRY'S NOISE PROBLEM

AVOID LAWSUITS FROM DEAFNESS

Send for literature

Sigma Engineering Company

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Distribution of Personal Protective Equipment

DURING recent years there has been a marked trend to give employees individual protective equipment. Articles worn or used by an individual are personal things and, in most cases, should belong to the person using them.

The days of the community dipper and water bucket have long since passed in the modern factory. So have the days of the single pair of goggles over the grinding wheel. Many companies have found that employees will accept and wear protective equipment more readily if proper and comfortable equipment is individually furnished and kept clean.

It is simple enough to decide that employees should be equipped with proper protective devices but in plants with highly diversified operations it is often difficult to carry out such a program.

The first step is a comprehensive survey of the entire plant. This should establish complete records of the equipment required to protect employees in various operations. Changes in operating conditions and other variable factors should be watched since these will result in changed requirements for protective equipment.

Establishing requirements for protective equipment and acquainting both supervision and the man on the job with these requirements can be done effectively. Following is one method of approach:

1. Equipment can be specified for an entire area—e.g., anyone entering an acid manufacturing plant must wear chemical goggles, or all personnel working in warehouses must wear safety shoes.

2. Equipment can be required by general categories—e.g., personnel handling any acids must wear rubber or plastic gloves and chemical splash-proof goggles.

3. Where a large number of potentially hazardous materials may be handled infrequently, a schedule can be established with the specific requirements for each category of chemicals. Orders are coded so that the supervisor can refer to this schedule and ensure that all personnel handling the material are adequately protected. This procedure is particularly desirable where the hazardous properties of the chemicals vary widely, since nothing is

so prone to lower employee morale as requiring them to be overly protected when handling innocuous materials. Most operations in chemical plants should be surveyed and a combination of the above steps utilized. Employees should be instructed as to the precise equipment required during the various stages of operations.

A list of approved equipment for various operations should be established. Equipment should be selected on the basis of design, performance, reliability of manufacturer, etc. It is desirable to standardize items throughout the plant insofar as possible. It is likewise good policy to review the list periodically, modifying it when new and improved equipment becomes available.

Adequate supplies of various items, in a well-assorted range of sizes, should be kept in stock. A competently supervised marker system is usually the most feasible for assuring adequate supplies. Nothing is more damaging to a new employee's attitude toward safety than to send him to the stores for specified equipment and be told that the stock is temporarily depleted.

It is also disastrous to issue equipment that is ill fitting. It will be uncomfortable and offer reduced protection.

Most companies issue personal protective equipment without cost to the employees. This is only natural, since if the company cannot provide a completely safe working environment, it

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Also makers
of PLY CREAMS to guard
against Industrial Dermatitis

Write, Wire or Call COLLECT
for the jobber nearest you

should provide the necessary means for the employee to protect his life and health.

Some managements issue certain equipment and pay only a portion of the cost. Notable examples are safety shoes and prescription safety glasses. This category generally includes equipment which is of a supplemental nature and is supplied as a service to the workers. Experience has shown that employees tend to take better care of property in which they, as well as the company, have a financial interest.

Low cost items that are used in considerable quantities can be most conveniently issued at the various manufacturing areas. More expensive or specialized equipment should be stocked and issued at a central point, so that a minimum working stock can be maintained. Authorization for its withdrawal should come from the worker's immediate supervisor, since he is in a position to maintain a watch over consumption and prevent needless waste.

The stock room should be neat, clean, orderly, and presentable. Its appearance will have a marked effect on the employees' acceptance of equipment. No one likes to think of wearing respirators that have been stored in a room where poor housekeeping is in evidence. This factor is particularly important in the case of new employees, who often get their first impression of a plant when they are sent to the stores section to be equipped with protective articles.

From a morale standpoint, it is desirable to clean, sterilize, and refurbish dirty or worn-out equipment as needed, and always before use by another person. Some plants have an employee who moves throughout the operating areas—cleaning, sterilizing, and adjusting safety devices, such as goggles, respirators, etc. Other items could more conveniently be cleaned and reworked at a central point where spare parts are available. Manufacturers are usually happy to furnish complete instructions for reworking and cleaning personal protective equipment.

If the company provides employees with adequate, comfortable personal protective equipment, teach them how to wear it, supervise and ensure that it is worn, and maintain it in a clean and sanitary condition, the life and health of employees will in a large measure be safeguarded.

On the other hand, no personal protective equipment can replace intelligent, safety-conscious employees, and safe working conditions.

Safe Storage

Fires in storage areas are responsible for more than one-third of the total damage in plants insured by Factory Mutual Insurance Companies, according to *Factory Mutual Record*. Such fires do not occur as frequently as fires in manufacturing areas but they have caused on the average more than seven times the damage per fire.

Fundamentals for safe storage include:

1. Keep storage out of manufacturing areas.
2. Keep storage from below manufacturing processes unless the building is non-combustible and floors are watertight.
3. Storage rooms need sprinklers if either the storage or the building will burn.
4. Store valuable materials in sprinklered building.
5. Don't overlook fire protection just because shed values are small.
6. Keep sources of ignition out of storehouses.
7. Keep storages in low, well separated piles.

High Voltage Equipment

Special tools and protective equipment have been developed for linemen and generating station employees. Operating conditions vary but certain items are standard.

Tools used near energized equipment should be designed for the job and insulated to minimize the danger of short circuits in the equipment and shock to the operator. Insulation on tools alone, however, is not adequate protection near high voltages.

Items in common use include:

- Linemen's rubber gloves
- Leather protector gloves
- Rubber line hose and blankets
- Linemen's belts and safety straps
- Climbers
- Rubber coats
- Tool pouches
- Tool buckets
- Fuse pullers
- Switch sticks
- Insulated stools
- Switchboard mats

Regular and thorough inspections should be provided for all protective equipment. Any article found defective should be immediately replaced.

Brooms, brushes and other cleaning equipment used around energized equipment should be free from metal. Insulating handles of tools should be kept clean and dry and only non-conducting preservatives used on them.

See *Tentative Specifications for Rubber Insulating Gloves*, ASA No. J6.6-1952 (ASTM Designation D120-52T).

These Should Be Reported To the F.B.I. . . .

1. All attempts at espionage.
2. All attempts at submarine or parachute landing of personnel.
3. Individual or group possession of foreign propaganda.
4. Large caches of supplies of guns and ammunition.
5. All attempts to poison or infect municipal water supplies and sources.
6. Fires or explosions that indicate sabotage.
7. Evidence of radioactive materials in possession of unauthorized individuals or groups.

SECTION 5

MATERIALS HANDLING

Modern Handling Methods

MATERIALS HANDLING has been defined as "the science and art of conveying, elevating, hauling, transporting and handling materials from one location to another."

Materials handling also includes storage and warehousing of materials while in process, in the finished state, and awaiting distribution.

Modern handling methods have been planned to tie in with production methods. To meet these needs, a great variety of handling devices has been developed. By taking the strain off human muscles and reducing the exposure to many hazardous processes, mechanical equipment for handling materials has contributed much to improved safety conditions in industry.

Where large quantities of materials move in more or less continuous flow in fixed paths, conveyors, traveling cranes, railroads and elevators are used.

When goods move intermittently between many points in plant and yard without regard to fixed limits, mobile trucks of many types and tractors and trailers are employed.

Every plant needs portable types of equipment. In the smaller plant they may serve all handling needs. In the larger plant they are useful auxiliaries to fixed systems.

Basic equipment. This discussion will be concerned chiefly with portable equipment in common use, including:

1. Wheelbarrows
2. Hand trucks
3. Hand lift trucks
4. Powered hand trucks
5. Industrial power trucks
6. Hoists
7. Cranes
8. Conveyors
9. Slings and accessories

10. Miscellaneous equipment—Skids, pallets, steel strapping, grabs, tote boxes, bridge plates, dollies, etc.

Load-Bearing Parts

Wire rope, chain and fiber rope are important wherever loads are lifted or hauled. These products are built to meet exacting specifications and their capacities are listed according to size, material and type of construction.

Slings made of these materials, and their accessories, such as hooks, rings, etc., can be obtained from manufacturers planned to meet the needs of every hoisting job.

These parts are subjected regularly to heavy loads, sometimes overloads. They should be selected for the needs of the job and kept serviceable by regular inspection and maintenance.

Unit Loading

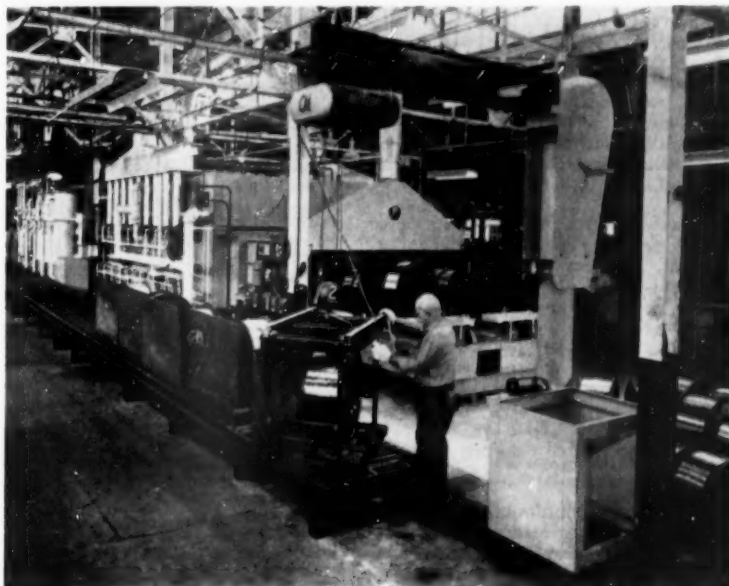
Assembly of loads on skids, pallets or trailers to be moved from one part of

the plant to another means less handling and more pieces per each handling. To move the load it is only necessary for the truck to slide the platform or fork under the skid or pallet or to hook a tractor to the trailer.

A skid is a platform elevated from the floor by legs, casters or special attachments.

A pallet is a development of the platform skid. The most common type is the double-faced wooden pallet with sufficient clearance between top and bottom to insert the forks of a fork truck for moving.

Steel strapping provides a secure method of fastening some types of bundled materials for shipping and for reinforcing packing cases. Workers need training in application and removal and should wear goggles and leather palm gloves for the work. Equipment available from suppliers should be used for applying and removing strapping.



Swinging hoist and roller conveyor handle heavy drums of copper wire at annealing furnace. Wire is loaded on bulkhead type trays and fed into annealer by pusher control. Annealer is gas-fired, radiant tube heated, and hooded to carry off heat and fumes. (Anaconda Wire & Cable Co.)

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Industrial Trucks and Tractors

Wheeled vehicles of many kinds, both hand and power operated, keep goods moving in factories, warehouses, docks and railroad terminals. There are types for every hauling or lifting job.

Wheelbarrows are useful for hauling and dumping bulk materials. They can be used where a two- or four-wheeled vehicle could not be maneuvered. Bodies of aluminum and magnesium alloys and rubber tires have made them lighter and easier to handle.

Hand trucks. The two-wheeler, designed for handling bags, drums, barrels, cartons, beverage cases, etc., comes in a variety of sizes and types. It can be equipped with brakes.

Hand platform trucks are available in several designs with capacities for 150 to 2,000 pounds. They are usually designed to be pushed by one of the end racks. They are suitable for short hauls.

Hand lift trucks. The load, supported on platforms or skids, is raised enough for horizontal movement and pulled by hand power. These are useful where loads are relatively light and distances short.

Power Trucks

Power units for moving materials are operated by gasoline engine or storage battery. The type of truck used should comply with fire protection regulations for the location.

Powered hand truck. Similar to hand lift truck. Power for operation is supplied by storage battery. A motor mounted on the forward wheels supplies power for hauling. The truck is controlled by a walking operator.

Platform truck. Used for hauling baggage, mail, and packages at railroad stations and steamship piers. In industry it is used for hauling tote boxes and miscellaneous materials. Loading is by hand.

Low-lift platform truck. Platform elevates just enough for horizontal movement. It picks up loaded skids, moves and sets them down in other locations without manual handling or use of other handling equipment.

High-lift truck. A load carrying truck, with lifting mechanism designed to permit tiering one load upon another. Brakes give operator control of lifting device and platform at all elevations.

Fork truck. A cantilever type self-loading truck with vertical uprights and elevating mechanism. Forks require less clearance than platforms and may be used with shallow pallets as well as skids. Double faced pallets afford wider load distribution, which is an advantage in tiering.

Canopy guards. Where fork truck operators are exposed to danger from falling objects, the truck is required by code to be equipped with a canopy guard, strong enough to support a capacity load and have no opening larger than the smallest package carried.

Scoop trucks shovel loose materials and elevate and dump them into hoppers or bins.

Ram trucks handle wire and strip metal in large coils. Roll-handling trucks for handling newsprint or other paper are equipped with a cable drum with two cables. Hooks on the cables hook over the ends of a rod which serves as an axle for the roll.

Crane trucks equipped with boom, cable and drum, with special lifting hooks, spreaders and slings are used for moving heavy unit loads and objects too large to be handled on truck platforms or forks.

Portable elevators (tiering machines or stackers). The portable elevator consists of an upright frame to which is mounted a platform that can be raised or lowered. It is moved from place to place manually. The hoisting mechanism can be either manually or power operated.

Portable elevators are used in warehouses for piling and storing materials. They should be equipped with a braking device to permit the safe lowering of the platform and a ratchet lock or dog should be provided to lock the platform in position during loading and unloading.

Safeguards include limit stops for top and bottom travel limits on the hoisting cable drum, as well as for the shipper rope, if one is provided. When in use, casters should be lifted off the floor.

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Many types of fork trucks have been designed for special conditions. This truck has low over-all height and light weight for use around motor trucks and freight cars. Dockboards of steel and light metals facilitate safe loading and unloading. (Yale & Towne Manufacturing Co.)

Tractors and trailers are used where large quantities of materials must be moved over relatively long distances, as at freight terminals and piers. Loading and unloading is done manually or by crane or other external means.

Material Handling Principles

Handle materials in large units. A two-wheel hand truck is better than a man's hands. A four- or six-wheel hand truck is better than either. A lift-truck pallet combination is the most efficient system for many jobs.

Avoid rehandling. Every time you pick up materials and put them down again, it costs money and offers opportunities for accident. Arrange your system to handle goods as little as possible.

Balance men and equipment. Assign no more men and no more equipment to a job than needed. Equipment sets the pace for men, not men for equipment.

Select equipment suited to the job. Study operations. Find out exactly what equipment is needed and standardize on that. The nature of facilities, floor load capacity, ceiling height, volume of material to be handled, intermittent or steady flow, commodity characteristics, and strength for package all have to be considered.

Move materials in a straight line. Flow of materials should always be toward destination. Lay out work areas so that back and cross hauling are held to a minimum.

In storage, items with greatest activity should be warehoused nearest to entrances and exits.

Lubrication

MODERN MACHINES operate at high speeds on countless bearings which need proper lubrication at frequent intervals. New lubricants and new lubricating systems had to be developed to meet industry's needs.

Lack of lubrication contributes to the danger of fire or machine failure by causing excessive heat or damage to the surfaces of moving parts.

Automatic lubrication is safer and more efficient than direct application of oil or grease to bearings by use of an oil can or grease gun.

Automatic oilers are of the following types:

- Capillary oilers
- Wick oilers
- Ring and chain oilers
- Gravity feed oilers
- Pump feed oilers
- Cartridge lubricators

Machines with hundreds of remote bearings can be served efficiently and economically by centralized systems. Clean oil or grease is supplied under pressure from the central pumping unit to every bearing.

The lubricant is renewed as often as the machine and operation require, which may be once or twice each shift or several times an hour.

On some systems an indicator signals the delivery of the correct amount of oil to each bearing.

With a central pressure system there is no need to stop the machine for lubrication and the hazardous job of crawling over the machines is eliminated.

Pressure lubrication systems require the use of special greases. No single lubricant has been found best for all types of machines.

For Older Installations

On older machines addition of an automatic system may not be practical. Other measures will help to improve lubrication and reduce the hazard to the oiler. One or more of these methods may be used for reaching remote bearings:

1. A service platform or runway giving access to several bearings. Moving parts of machinery should not project over platforms; if this is unavoidable, these parts should be enclosed.

2. A small car suspended from an overhead I-beam enables the oiler to travel parallel to the line shaft, and reach bearings with his oil can or grease gun.

3. Long-spout gravity flow or force-feed oil cans enable the oiler to stand in the clear. Some of these have spouts long enough to reach overhead line shaft bearings from the floor.

4. Oil reservoirs at individual bearings with control devices operated by hand poles.

5. Extension pipes on bearings where grease or oil cups are in the danger zone. These may not be practical in cold places where low temperatures make it difficult to force oil or grease through the pipes.

This Picture is WORTH 1000 WORDS!

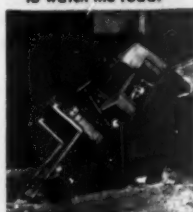
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1 "It's fun to watch the scenery; it's safer to watch the road."



2 "All right then... you won't make that mistake again!"

WHEN IT COMES TO TRAINING industrial truck operators, one picture is worth a thousand words. Clark's new "Safety Saves" movie is the only driver safety-training film in the materials handling field. It's a 30 minute sound movie, filmed entirely "on-the-job", and it's available to you on a loan basis.

You (and your drivers) will see hair-raising examples of how *not* to handle a fork truck, as demonstrated by Willie the Cowboy. After you've seen Willie's way, you'll see the safe, correct way to drive and take care of a truck. To help cut accidents and improve driver performance, *all* your drivers should see "Safety Saves". Use the coupon to indicate when you want it—the only cost to you is return postage.

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EQUIPMENT

Wire Rope

WIRE ROPE provides high tensile strength and moderate flexibility for heavy lifting and haulage and for supporting rigging. It is serviceable under varying weather conditions but it should not be exposed to excessive heat or corrosive substances nor dragged over abrasive surfaces.

In selecting wire rope, the following should be considered:

1. Size
2. Construction
3. Grade
4. Equipment on which rope is to operate
5. Handling, installation and maintenance of the rope.

Constructions

Wire rope is manufactured in a variety of constructions, each designed for certain service conditions.

In designating construction, the first numeral identifies the number of strands in the rope, the second, the number of wires in each strand. This is followed by a term describing the geometric arrangement of wires in each strand, e.g., 6 x 19 Filler Wire.

The 6 x 19 construction is the most generally useful. As the number of wires per strand increases, flexibility and reserve strength increase but ability to withstand abrasion decreases. A 6 x 7 construction has higher resistance to abrasion but less flexibility.

The core serves as a foundation for the strands. Three types of cores are used: (1) fiber; (2) independent wire rope, and (3) wire strand. Fiber gives elasticity to the rope and is adequate for normal operating conditions.

Metal cores are used where maximum strength and minimum stretch are important, or where heavy loads or overwinding on a drum causes excessive pressure of strands against the core, or temperature is sufficient to dry out a fiber core.

Type of Lay. There are two general methods of laying up rope: (1) Regular lay in which the wires in the strands are laid in the opposite direction to that of the strands in the rope, so that on the outside of the rope the wires lay approximately parallel to the rope axis; (2) Lang lay rope, in which the wires and strands are laid in the same direction.

Regular lay rope is standard for most applications. It is easier to handle during installation and less susceptible to kinking.

Lang lay rope has good flexibility and high resistance to abrasion and fatigue.

Wire rope is made either right or left lay. In most cases it makes little or no difference which type is used; right lay is standard.

Rope Grades

Rope wires are usually made of the following materials and designated by their names. (Minimum tensile

strengths are quoted from Federal Specifications RR-571 a.)

Improved plow steel. Has highest strength and toughness and most wear resistant properties. Most frequently selected for heavy duty service, as in deep shafts and on excavating machinery. Minimum tensile strengths, 218,000-244,000 p.s.i.

Plow Steel. Strength about 15 per cent less than improved plow steel. Serviceable for haulage, hoisting, logging and miscellaneous service. Minimum tensile strengths, 190,000-212,000 p.s.i.

Mild Plow Steel. Combines toughness with pliability, making it capable of undergoing repeated impact stresses. Used principally for cable tool drilling. Minimum tensile strengths, 165,000-184,000 p.s.i.

Cast Steel. Where strength is not the controlling factor, its pliability is important in long fatigue life. Resistant to acid mine water. (Not listed in Federal Specifications.)

Traction Steel. Used in hoisting ropes for traction type elevators. High resistance to bending fatigue and minimum abrasive action on sheaves and drums. Minimum tensile strength, about 160,000 p.s.i.

Iron. Low tensile strength (about 70,000 p.s.i.) but very ductile. It has been used principally in elevator service where it is being replaced by traction steel.

Corrosion-resisting metals. Where corrosion is a factor, stainless steel, bronze and monel metal are frequently used. All-metal ropes are preferred to fiber core ropes.

Stainless steel is used in marine oper-

ations on aircraft, and where rope is exposed to alkali, acids of an oxidizing nature (such as nitric), neutral brine, food products, and temperatures damaging to carbon steel ropes.

Bronze has strength slightly in excess of iron rope. It is used frequently in marine service.

Monel metal is used where rope is exposed to marine atmospheres, acids of a reducing nature (such as sulfuric, muriatic and hydrofluoric), neutral brines, food products, pickling solutions, and aromatic chemicals.

Corrosion-resisting ropes are furnished in complete assemblies and slings with fittings attached. Temperature, humidity, nature and concentration of corroding chemicals should be considered in selecting equipment.

Wire Rope Slings

Wire rope slings are widely used for heavy lifting. Wire rope should not be used, however, where there are sharp bends over an unyielding surface. Tension of outside strands may cause serious injury to the rope.

Where a load has sharp corners, pads should be placed between the load and the sling.

The maximum load can be lifted when all legs of the sling are in a vertical position. The smaller the angle formed between the legs of the sling and the horizontal, the greater the tension on the legs of the sling and the less weight which can be lifted.

Proper selection and attachment of fittings have much to do with rope life and safety. Principal connections and attachments are:

- Babbitt or zinc socketed connections
- Wedge sockets
- Swaged attachments
- Thimble with clip connections
- Three-bolt clamp connection
- Spliced eye and thimble connection

When slings are to be used for special purposes the advice of the manufacturer should be obtained.

Preformed Wire Rope

A preformed wire rope is one in which each individual strand, and at the same time each individual wire, is permanently formed into the helical shape it will assume in the finished rope. Some advantages of preformed rope are:

1. Higher resistance to bending fatigue.
2. Greater flexibility.
3. Less susceptible to kinking and therefore easier to install.
4. More equal distribution of load on each strand and wire.
5. More resistant to whipping and vibration.

—To page 162



Safety to life and property often depends on the wire rope raising and lowering the boom. This locomotive crane, recently built for government service is protected against fire by an automatic carbon dioxide system. (Walter Kidde & Co.)

WIRE ROPE STRENGTH

Grades	Breaking Strength (Lbs.) of 5/8" Rope
Iron	12,500
Traction Steel	23,000
Mild Plow Steel	24,600
Plow Steel	28,300
Improved Plow Steel	32,600

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this colorful, 24" x 34"
poster, "Here's how
to operate your
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Check these Lewis-Shepard
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- Clear-through operator's corridor with entry and exit from both sides and at one easy-step height.
- Standrive operation makes any emergency dismounting easier and quicker.
- Standrive also allows comfortable and easy reverse operation. You can operate a SpaceMaster in reverse as easily as forward. Good safety practice calls for trailing large, bulky loads that obstruct vision.

- ☐ Please send me free copy of safety poster.
- ☐ I would like to see a SpaceMaster Catalog and Electric Fork Truck Comparison Chart.

Name _____

Company _____

Street _____

City _____ State _____

NO!



Here, conventional U-Bolt clips are properly applied but rope is distorted and subject to life-shortening strains under load.

NO!

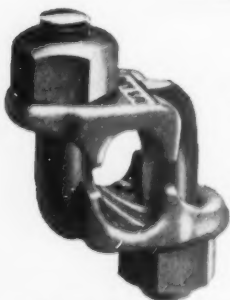


Inexperienced workmen can easily put conventional U-Bolt clips on incorrectly with saddles not on load-line. Result: Weakened rope — risk of accidents.

It CAN'T Go On Wrong

Both halves of the Laughlin Safety "Fist Grip"* clip are identical. There is no wrong way. The most careless workman can't put 'em on wrong (unless he forgets to tighten the nuts). And they're not only safer and practically fool-proof, but they're a darn sight easier to use.

Here's why:



Nuts are out in the open, can be tightened with any wrench, and don't have to be "inched around."

Bolt ends are shorter and don't get battered or bent. Nuts are always easy to remove when clip is to be re-used.

No crushed rope ends under "Fist-Grips" to cut off. Rope saved.

Fewer clips are required in many installations, so there is less work to do.

"Fist-Grip" Clips are just one example of many LAUGHLIN EXCLUSIVES in design, safety and quality that make Laughlin your best buy in wire rope and chain fittings.

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33 FORE ST., PORTLAND, MAINE

LAUGHLIN

THE MOST COMPLETE LINE OF WIRE ROPE AND CHAIN FITTINGS

*Patented, T.M. Reg.

Wire Rope

—From page 160

6. Hugs small drums better and winds more uniformly and smoothly.

7. Operates over sheaves with less rotation around its axis, resulting in less wear on rope and sheaves.

8. May be socketed with less danger of unbalancing the lay of the rope below the base of the socket.

9. Does not unravel when seizings are removed from ends of rope.

10. When outer wires break through fatigue, they do not protrude or "porcupine." This reduces risk of injury in handling.

Since broken wires are less conspicuous in preformed rope, greater care is needed in inspection. However, broken ends separate slightly, permitting detection.

Strength and other qualities are the same for preformed and non-preformed rope of the same size, grade and construction.

Causes of Failure

When wire rope fails to give the expected service, the reason is seldom a defect in the construction of the rope. Following are some of the more common causes:

1. Use of rope of incorrect size, construction or grade.
2. Allowing rope to drag over obstacles.
3. Lack of proper lubrication.
4. Sheaves and drums of inadequate size, causing short radius bends.
5. Overwinding or crosswinding on drums.
6. Sheaves and drums defective or out of alignment.
7. Ropes jumping sheave flanges.
8. Effects of heat, moisture, or acid fumes.
9. Improper fittings.
10. Permitting ropes to untwist.
11. Kinking.
12. Severe overloads, reverse bends, and other excessive stresses.
13. Internal wear caused by grit penetrating between strands and wires.

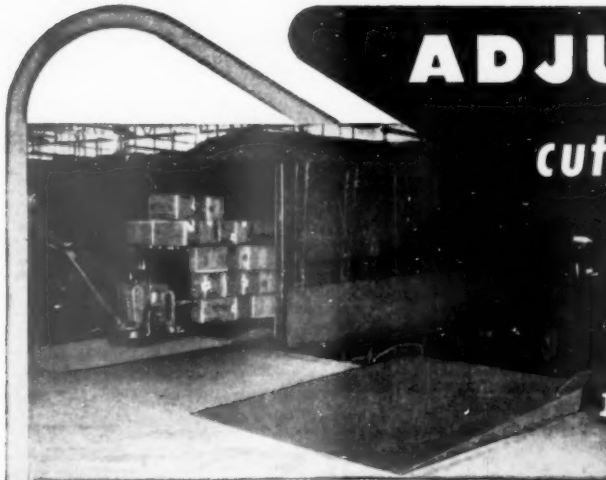
How to Order

When ordering wire rope, the following information should be furnished:

1. Length.
2. Diameter.
3. Construction—Number of strands; Number of wires per strand; Arrangement of wires in strand, such as Seale, Filler Wire, etc.
4. Type of Fabrication—If preformed rope is desired, it should be specified. Otherwise, non-preformed rope will be furnished.
5. Finish—Galvanized finish should be specified if required. Otherwise bright rope is usually furnished.
6. Grade—Improved plow steel. Plow Steel, Iron, etc.
7. Lay—Regular Lay Right Lay will be furnished unless otherwise specified. Lang Lay or Left Lay is furnished on request.
8. Core—Specify fiber core, independent wire rope core, or wire strand core.
9. Lubrication—Type of lubricant should not be specified unless there are unusual service requirements. Each construction and grade of rope is treated with a lubricant adapted to that particular rope for a wide range of service conditions.
10. Use for which rope is intended.

Wire Rope Lubrication

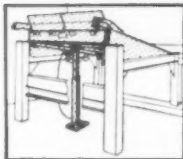
All wire rope should be treated at regular intervals with a lubricant to keep it pliable and to prevent rust. Pound for pound, wire rope probably has more bearing surface (inside the



ADJUST-A-DOCKS

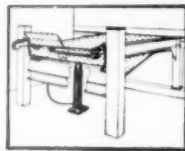
cut your dock handling
time **67%**

1 ADJUST
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DOCK **= 3** ORDINARY
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With Rowe ADJUST-A-DOCKS shipments are moved directly into highway trucks, eliminating costly hand loading. One ADJUST-A-DOCK handles three times the ordinary dock volume . . . often pays for itself in 30 days. Breakage is prevented . . . dangerous loose dock plates are eliminated. Ask for complete data today.

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NEWCO WIRE ROPE CLAMP AND THIMBLE



**THE HEAVIER
THE LOAD
THE TIGHTER
IT HOLDS!**

Pat. No. 2600417



**SIZES
TO FIT
WIRE ROPES
FROM 1/8" TO 1" IN
DIAMETER**

**DEVELOPS
85 TO 90%
OF ULTIMATE
ROPE STRENGTH
(95-100%
CATALOG LIST)**

For combined safety and efficiency, users of wire rope rely on the Newco Wire Rope Clamp and Thimble. The heavier the load, the tighter the halves are forced together, insuring you of complete safety in operation. Easy to install in field or shop. **NO WRONG SIDE**—threads either way, and never needs lubricating. Increases profit by reducing down time as much as two-thirds.

*See your distributor
or write direct to*

NEWMAN MFG. & SALES CO.

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BOX 5939

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ACCO Registered DUALOC Slings are Lifting Tools

• DUALOC Slings, whether strand-laid or cable-laid, provide the material handling engineer with a tool of known strength and safety factor throughout. The design is modern . . . tested . . . and proved in service.

The DUALOC Ending insures sling strength equal to the FULL catalog strength of the wire rope, and the "Registry" specification requires that all fittings have strength equal to that of the wire rope. These are the basic reasons why ACCO Registered DUALOC Slings have set industrial sling standards.

You can get DUALOC Slings and Fittings from the stock of your ACCO Sling distributor. See him today or write our nearest district office for his name.

ACCO

*Trade Mark Registered Patent No. 2463199

**WIRE ROPE SLING DEPARTMENT
AMERICAN CHAIN & CABLE**

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles,
New York, Odessa, Tex., Philadelphia, Pittsburgh,
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**ACCO
Registered
DUALOC
Slings**

rope) than any other equipment, so the importance of lubricating is obvious.

Idle wire ropes are most susceptible to damage by rust. It is important to see that they are well lubricated when not in service.

The best lubricants are those furnished by manufacturers and dealers especially for lubricating wire rope.

Lubricants which meet specifications are free from acids and corrosives and have good penetrating qualities. They do not cake, gum or ball-up if contaminated with dirt or metal particles.

Lubricant may be applied with a brush. It should be brushed on slowly, carefully and frequently because it is difficult to get complete coverage and penetration.

A more effective method is a simple three-sheave trough. It should be firmly fixed near the reel or drum and the rope run through the lubricant not faster than 30 feet a minute.

REFERENCES

- Wire Rope, Safe Practices Pamphlet 26, NSC.
- Wire Rope, Federal Specifications RR-R571a.
- Wire Rope, Simplified Practice Recommendations No. 198-43—National Bureau of Standards.
- Know Your Wire Rope, by B. N. Carlson—N. S. News, Feb. 1949, p. 39.

Conveyors

Where material moves in continuous flow, power-operated and gravity conveyors eliminate much handling and many opportunities for injury.

Principal types are roller, chute, belt, chain, portable, screw, pneumatic, monorail, and overhead trolley.

For efficient and economical operation, fixed systems require thorough study of the plant's manufacturing and material-handling problems before installation.

Gravity conveyors are of two general types—chute and roller.

Power-driven conveyors should be equipped with emergency stopping devices located at convenient points.

Crossover bridges with adequate handrails should be placed where needed. Side boards along edges and at turns of overhead conveyors and screen guards under high runs protect workers and equipment from falling material.

Portable conveyors, mounted on wheels or casters, can be moved where needed and are time, labor and back savers for short jobs. Both gravity and power-driven types are available. They are made in roller, belt and bucket types for handling packages and loose materials. They are often used at warehouse, docks, shipping platforms, coal yards, and sand and gravel pits.

REFERENCES

- Conveyors—Safe Practices Pamphlet 35, NSC.
- Looking Over a Mechanized Foundry, by F. B. Skeates—N. S. News, June 1951, p. 20.
- It Goes Where Men Can't, by Jervis C. Webb—N. S. News, Oct. 1951, p. 94.
- Conveyors, Cableways and Related Equipment, Safety Code for (B20.1-1947)—American Standards Assn.

Fiber Rope

FIBER ROPE is widely used for block and tackle work, for suspending scaffolds and staging, in marine operations, and for life lines and lanyards. It can be tied and spliced easily and its flexibility adapts it to many uses.

The best fibers have good tensile strength and resistance to weather and abrasion. When the larger sizes of fiber rope would be indicated for heavy loads, wire rope furnishes the required strength with less bulk.

Fiber rope should never be exposed to high temperatures or to acid or acid fumes. Sharp bends should be avoided. Where a sling passes over sharp edges pads should be used to protect the rope.

Rope should not be kept in stock for long periods. Vegetable fiber deteriorates with age, even under favorable conditions. When rope is used only at long intervals, age should be considered in its use and retirement.

Natural Fibers

Manila fiber is standard for tensile strength and durability. A good grade of manila rope, when new and clean, is hard but pliant, yellowish in color with a silvery pearl luster. When drawn through the hands, it has a smooth, almost silky feel.

Sisal is the next best fiber. Strength varies from 65 to 80 per cent of manila. Sisal rope has a yellowish color, with sometimes a slight greenish tinge. It lacks the gloss and smoothness of good manila. Sisal fibers are stiff with a tendency to splinter.

Mexican sisalana (henequin) lacks the strength of high quality sisal but has been used to some extent during the shortage of better grades of rope. Strength is about 60 per cent of manila.

—To page 166

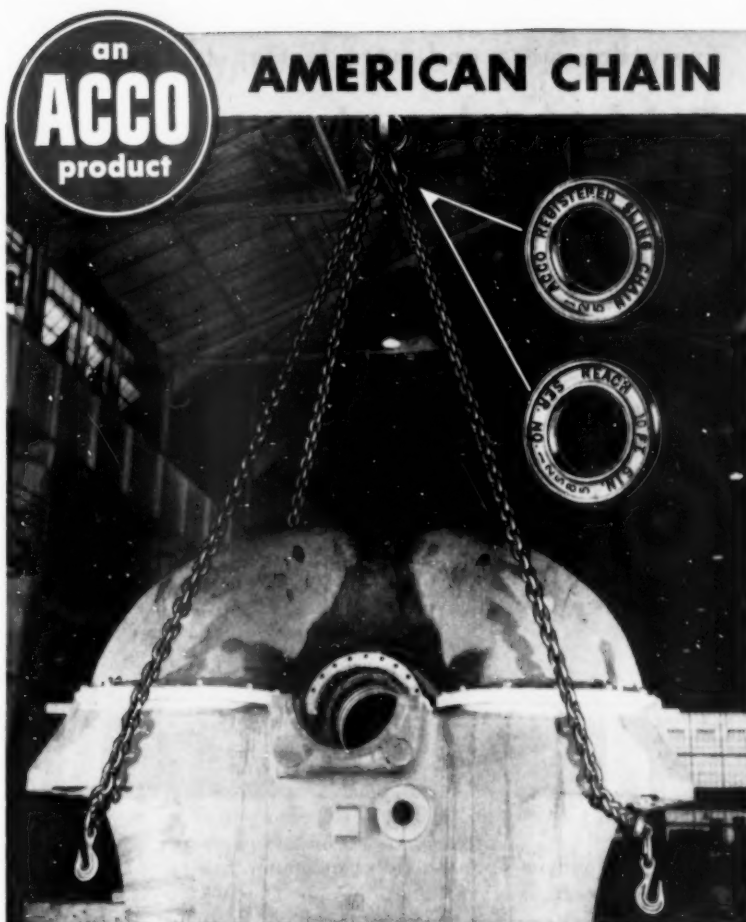
FIBER ROPE MAINTENANCE

THE life of fiber rope and safety in its use depend greatly upon the good treatment the rope receives. Some good maintenance suggestions include:

1. Prevent the rope from kinking. (See Safety Instruction Card No. 353.)
2. Use blocks of sufficient size to allow the rope free play in sheave grooves.
3. Rope is injured by being dragged over the ground, over uneven surfaces, or bent over sharp corners. In making rope fast, select a round smooth surface, or use pads to protect it.
4. Keep rope from freezing. Thaw out a rope slowly; high temperatures destroy the rope rapidly.
5. Alternate wetting and drying cause injury to rope fibers. If the rope is to be exposed to weather continually, it should be treated with a preservative from time to time.
6. Prevent the rope from coming in contact with acid.
7. Coil damp rope loosely and hang it up to dry. Clean dirty rope thoroughly and dry it before storing. (See Safety Instruction Card No. 360.)
8. Store rope in a clean dry place where it will not be exposed to high temperature.



SAFETY INSTRUCTION CARD No. 106



"Why do we use American Chain?"

"For two reasons," said this manufacturer of heavy machinery. "First, we have used American Chain successfully for years. Second, the high strength alloy it is made from permits using smaller diameter chain which is hooked up easily by our men. And the men like the way the grab hooks slip over the links and set themselves securely. I think they just feel safer working with American Chain."

This AMERICAN CHAIN user is referring to our 125 Endweldur alloy steel, heat-treated ACCO Registered sling chain with our series 40 drop-forged grab hooks.

No matter what chains you require, AMERICAN has them and will furnish chains that will last longer . . . and cost less to use. Call your AMERICAN CHAIN distributor today and let him make recommendations. Or write to our York office for Bulletin DH-314.

ACCO



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AMERICAN CHAIN & CABLE

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New York, Philadelphia, Pittsburgh, Portland,
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**American
Chain**

Every day more and more factory men tell us —

Tokheim hand pumps are safer, faster, more useful!

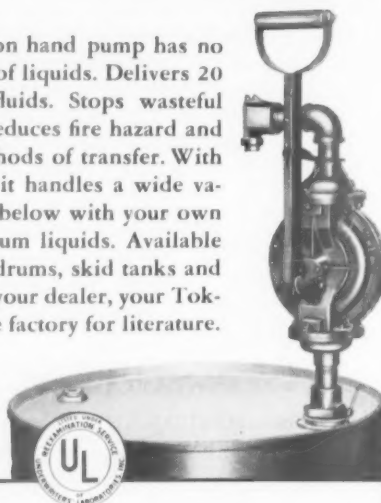


This new Tokheim double-action hand pump has no equal for speedy, safe handling of liquids. Delivers 20 gallons per minute of most fluids. Stops wasteful dripping and slippery floors. Reduces fire hazard and accidents common to other methods of transfer. With optional diaphragm and body, it handles a wide variety of products. Compare list below with your own needs. UL-approved for petroleum liquids. Available in hose and spout models—for drums, skid tanks and underground installations. Call your dealer, your Tokheim representative, or write the factory for literature.



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variety of liquids**

Acetates • Alcohols • Aromatic & Chlorinated
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monia • Ammonia Hydroxide • Cutting Oils
Flushing Oils • Lacquer Thinners • Anti-Freezes
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Factory Branch: 1309 Howard Street, San Francisco 3, California

Fiber Rope

—From page 165

American hemp fiber is much softer than manila. It has a dark gray color. It is not highly resistant to abrasion but when tarred it will give fair service on some jobs. Strength is about 80 per cent of manila.

Jute and cotton are not recommended for handling material or other uses where strength and durability are needed. Strength is about 50 per cent of manila.

Synthetic Fibers

Ropes of synthetic fibers are coming into wider use. They are more expensive than natural fibers, which restricts their use to certain specialized operations.

Nylon has a high rating for tensile strength, toughness, flexibility and durability. It is easy to handle.

Nylon rope has a higher tensile strength, wet or dry, than natural fibers and does not show marked deterioration when frozen. Melting at 480 degrees F., it can be readily destroyed by fire but it does not ignite and burn with flame. It is unaffected by rot or mildew. It is resistant to alkalis but damaged by acids.

Unolyn, a new synthetic fiber, has shown desirable qualities for life lines. It has unusual ability to absorb impact force but does not return to its original length after being subjected to severe strain. It is not suitable for hoisting or haulage.

Glass. High strength when dry but low resistance to flexing and abrasion. Poor performance when wet reported.

Saran. Resistant to rot and many chemicals. Practically unaffected by aging, direct sunlight and moisture. Only moderate resistance to abrasion and temperature.

Care of Rope

Rope loaded over 70 per cent of its breaking strength will be permanently injured. Such damage can be detected by examination of inside threads which will be broken in proportion to the overload.

Kinking is highly destructive to rope. It may cause hidden damage that will result in failure when the rope is again put under strain. Kinking is more likely to occur when rope is wet.

New ropes should be uncoiled by laying the coil on the floor with inside end down; then reach down through the center of the coil and pull this end up, unwinding the coil counter-clockwise. If the rope uncoils in the wrong direction, the coil should be turned over and the end pulled out on the other side.

Sometimes ropes become kinked after use. One method of removing these

—To page 171

*When You Need Better Chain...
Get the Best*



GET *Round* CHAIN

Outside, *Round Chain*, made by *Round Chain Companies*, might *look* like other chain, but there the similarity ends. Inside, *Round Chain* is superior—superior because it is the result of generations of chainmaking experience . . . PLUS recent new developments by *Round* metallurgists.

This experience and these developments make possible chainmaking advantages like these:

- Choosing the kind of raw metal best suited for making each type of chain.
- Forming and welding techniques which assure maximum link strength.

- Heat treating in special furnaces with automatic controls for maximum hardness and toughness.
- Producing at a rate consistent with quality control.
- Inspecting by microscope and spectroscope to check on physical composition and to detect flaws.

Next time you need chain, remember it's what is *inside* a piece of chain that determines the service and life you'll get from it. Today as always, the *INside* of *Round Chain* is the source of its superiority . . . is the factor that enables it to merit the term "BEST".

Next time, get the BEST. Get *Round Chain*.

**Wherever you are...
you're near a**

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**THE OLDEST NAME
Round
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The Round Line Includes Welded and Weldless Chain for Every Purpose

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- ROUND LOS ANGELES CHAIN CORP. Los Angeles 54
- THE ROUND CHAIN & MFG. CO. Chicago 38
- THE CLEVELAND CHAIN & MFG. CO.
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- THE PLATING AND GALVANIZING CO. Cleveland 5
- ROUND BRIDGEPORT CHAIN & MFG. CO. Bridgeport 1
- ROUND WOODHOUSE CHAIN & MFG. CO.
- ROUND ALLOYS MFG. CO. Trenton 7
- THE SOUTHERN CHAIN & MFG. CO. Birmingham 4

Load-Bearing Chain

STRENGTH and flexibility, resistance to abrasion, heat, shock, wear and corrosion are qualities which make chain suitable for heavy hoisting and haulage jobs. It should be remembered, however, that not all types of chain meet the requirements of specific jobs.

Conditions under which chain will operate should be considered in selecting types. Impact loading factors should be considered and allowance made for bumpy cranes, rapid lifts and sudden stops. Heat, corrosive atmosphere, and unnatural strains also affect the selection.

Specifications for various types of chain have been compiled by the American Society for Testing Materials. The safe load may be determined from tables issued by the manufacturer.

Safe working load means the maximum load which should be applied to a chain in direct tension.

Breaking loads are merely of theoretical interest. They are misleading to the user and apt to promote unsafe practices.

Proof test means the actual test in pounds applied to the chain and attachments before leaving the factory. Proof test figures should not be considered as safe working loads. These tests are followed by visual link-by-link inspection by experienced inspectors.

Types of Chain

Conditions of use are important and the manufacturer should be consulted about applications for the various types.

Following are types commonly used in industrial operations:

Wrought iron chain (crane or dredge) has high resistance to shock fatigue and corrosion. This chain has close

links and is used for slings, hoists, cranes, power shovels, and marine purposes where human life and property depend on its endurance.

Welded steel chain (low carbon) is made in three common types: Proof Coil, BBB, and Steel Loading.

Proof Coil is used principally for towing, binding, logging and similar operations. Links are comparatively long. Proof Coil chain is not suitable for lifting or for slings.

BBB Coil is a higher grade than proof coil, with safe working load approximately 25 per cent greater. Shorter links give greater flexibility. BBB coil chain is not suitable for lifting or for slings.

Steel loading chain has a tensile strength approximately 50 per cent higher than BBB. It is used in the logging industry for binding and loading logs and in oil fields for handling pipe and heavy equipment.

High test chain (high carbon) is heat-treated to give it high tensile strength and resistance to impact loads. Tensile strength is approximately double that of ordinary steel chain. Ductility is moderate. Where resistance to wear is most important, it permits use of smaller and lighter chain.

Alloy steel chain (general purpose) has exceptional strength for weight and size. It is resistant to some types of corrosion. It is frequently used where maximum tensile strength and resistance to abrasion is required, with reasonable resistance to impact.

Special purpose alloy chain is considerably higher in cost and is used on high temperature operations and where resistance to the action of corrosive substances is required.

Stainless steel is high in tensile strength, fair in elongation, but low in impact resistance. It is used chiefly for ornamental installations and nitric acid pickling.

Monel has fair tensile and impact strength and elongation. It is resistant to sulphuric and hydrochloric acid solutions but not to nitric.

Bronze has good elongation and fair resistance to impact, but low tensile strength. It is resistant to sulphuric and hydrochloric acid solutions but not to nitric.

Specialized types of chains have been developed for certain industries, such as those used in marine operations.

Finishes are sometimes added to chains to provide added protection from corrosion or for decorative effect.

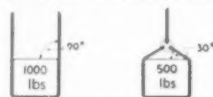
Nickel alloy steel hoisting chain is approximately twice as strong as iron chain of the same size. It meets ASTM elongation requirements for iron crane and proof coil chain. It can be used over a wider range of temperature and is relatively immune to failure result-

SAFE USE OF CHAINS

REMEMBER that old saying, "A chain is only as strong as its weakest link." Remember also that sometimes every link in a chain is weakened by overloading, or other abuse.

Use only chains you know are safe for the work in hand and keep in mind the following:

1. Don't overload a chain. Know the safe capacities of the chain you use.
2. When a sling chain is used so it forms a wide angle as it leaves the hook, the strain is much greater than when it forms a narrow angle. Always stop to think of this before making a lift.



Allowable safe load varies this way.

3. Don't apply a load to a chain suddenly.
4. Don't fasten chains over sharp corners or edges without padding them.
5. Don't cross a chain, twist it or put a link in it.
6. Don't tie a knot in a chain or bolt it to shorten or lengthen it.
7. Don't use a chain if inspection shows a flaw, insecure weld, crack, fracture, or any other defect. Put it to one side and tag it "danger—do not use."
8. Don't use a chain that has been strained by overloading.



SAFETY INSTRUCTION CARD No. 151

ing from fatigue stresses and cold working of the metal.

Storage. When not in use, each chain should be hung on a rack or placed in a neat pile on a dry floor or platform where it will not create a tripping hazard. Exposure to corrosive fumes or liquids should be avoided.

Safe Loads. Some plants stamp on a metal tag attached to each chain the safe vertical load which may be lifted with that chain. A better way is to stamp the safe load, or a reference number, on the ring or hook. Stamp marks should not be placed on links where they might form points of weakness.

The useful life of all material handling equipment, particularly rope and chain, is shortened by overloading, jerking, and neglect of the maintenance details recommended by the manufacturer.

Chain Slings

Chain slings are furnished complete with all attachments made to proper dimensions and of material specified for various uses with ample factor of safety.

Rings and hooks are as important as the chain itself and should receive the same attention in inspection and maintenance.

A hook bent by overloading should not be repaired and put back into service. The stress of bending weakens metal so that its future strength is unreliable.

REFERENCES

- Hoisting Chains—Safe Practices Pamphlet 98, NSC.
- Sling Chains—Characteristics, by N. J. Gebert—N. S. News, Dec. 1949, p. 28.
- Safer Lifts, by S. N. Morrison—N. S. News, Nov. 1950, p. 34.
- Chains That Won't Let You Down, by Jess Hogans—N. S. News, Jan. 1953, p. 32.



Systematic storage means better care and longer life for chains. (Pullman Co.)

ATLAS DC
Round-Braided
8-part Body
Sling.



Complete line of slings to fit every need

Three types of body are available: Atlas Round-Braided, Drew Flat-Braided, Monarch Single-Part. All are made to order in any size for any job.

Our engineers will gladly study your sling needs and make recommendations.

Sling life goes up with "balanced braiding"

Macwhyte's Atlas Braided Slings

There's longer life in an Atlas Braided Sling because of Macwhyte's *balanced* method of construction: 1. Ropes are spliced endless before braiding. 2. Right lay ropes balance left lay ropes. 3. All ropes follow uniform spiral paths, assuring balanced tension throughout the sling body.

Greater flexibility, no kinking, no spinning, and longer sling life are all provided by Macwhyte's "Balanced Braid."



Two Macwhyte Atlas type
1-CT Round-Braided Slings
with 6-ton lifting beam
handling plate stock.

MACWHYTE SLINGS

See the hundreds of slings
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MACWHYTE COMPANY

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Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cable, Safe-Lock Assemblies, Monel Metal and Stainless Steel Wire Rope. Mill depots: New York • Pittsburgh • Chicago • St. Paul • Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.



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LIFTING CLAMP
4 SIZES

TWIN LIFTER

HAND GRIP

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DRAG CLAMP
4 SIZES

DRUM OPENER

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Timber Storage

(Forest Products Laboratory)

SERIOUS losses from decay in wooden structures are due to infection of timbers with wood-destroying fungi while in storage. These losses can be greatly reduced by keeping lumber yards in a sanitary condition. Following are some hints:

Store on well-drained ground. removed from possible dangers of floods and standing water.

Remove debris and keep down weeds. All rotting debris scattered about yards should be collected and burned. In yards already filled in to considerable depths with sawdust and other woody debris the situation can be improved by a heavy surfacing with soil, slag, or similar material. Weeds should be cut away from piles to allow ventilation.

Use proper foundations. Attention should be given to the foundation of lumber piles to provide better ventilation beneath stacks. Solid foundations should never be used. In humid regions stock should never be piled less than 18 to 24 inches from the ground.

Wood blocking used in direct contact with wet ground should be protected by application of creosote or other germicidal oils or else replaced by concrete, brick, or other durable materials.

Treated skid timbers are also advantageous.

Slope lumber piles. Foundations should be built so that the piles will slope approximately 1 inch to every foot of length.

Assist ventilation by avoiding close piling in the open. In most regions lumber should not be close piled in the open, but should be "stuck" with crossers at least 1 inch thick. Lateral spacing is also desirable. Roofing of cover boards on the piles should extend over for several inches in front and back.

Take care of "stickers." Instead of throwing the "stickers" about on the ground to become infected with decay, they should be handled carefully and when not in use piled on sound foundations and kept as dry as possible. If pine saturated with resin, or heartwood of such durable species as white oak or red gum is employed, danger of infection is greatly decreased.

Keep sheds dry and well aired. In storage sheds the necessity for piling higher from the ground is very apparent in many cases. The same remedies apply here as for pile foundations in the open. Sheds should be tightly roofed and siding should not be run down below the bottom of the foundation sills. Free air circulation should be

LOWERY BROTHERS
WIRE ROPE SPLICING SERVICE

MANUFACTURERS OF SAFETY KING WIRE ROPE SLINGS, SHACKLES, SHEAVES, CABLES, IN ALL GRADES AND SIZES.

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allowed from all sides beneath enclosures. Only thoroughly dry stock should be stored in close piles under cover.

Check fungous outbreaks. Should fungous outbreaks occur in sheds not constructed to meet sanitary needs, the infected foundation timbers should all be torn out and replaced with wood soaked in a fungicidal solution, or by concrete or brick.

In all cases, new foundations should be constructed to keep lumber well off the ground, and soil and timber adjacent to the infected area should be sprayed or painted with a germicidal solution of a water-soluble salt, such as sodium fluoride, mercuric chloride, zinc chloride, or copper sulphate.

Fiber Rope

—From page 166

kinks is to open up the coil and recoil left-handedly. When the coil is completed, the free end is brought through the coil and the rope is then coiled right-handedly.

Uncoiling the rope and stretching it out in a single length is another method of unkinking where space permits.

Rope should be stored in a dry place where it will not be exposed to high temperature and where air may circulate through the coils.

Rope deteriorates very quickly if it becomes saturated with water and is not properly dried. Alternate wetting and drying will also cause rapid deterioration.

REFERENCES

Fiber Rope—Safe Practices Pamphlet 6, NSC.

Sisal Rope—Data Sheet D-Gen. 23, NSC.

Manila Rope—Federal Specifications TR 601.

Inside That Coil of Rope, by A. R. Hatch—N. S. News, Feb. 1948, p. 38.

Static Electricity

SPARKS resulting from accumulations of static electricity are a common source of fires. They are particularly dangerous in atmospheres where there may be flammable vapors, gases and dusts.

The hazard is most severe in cold, dry weather. In warm, humid weather most surfaces have a film of moisture which helps to draw off static charges.

Static charges result from friction between small particles, or from contact and separation of two unlike substances, one or both of which are nonconductive.

Flow of gasoline or other flammable liquids through hose, or dust-laden air through non-conductive passages may produce static charges.

Static electricity is generated on dry belts, particularly on rubber or leather belts by the contact and separation of belt and pulley. Excessive accumulation of static charges can be prevented by use of conductive rubber belting.

Belts can be grounded with sharp pointed metal combs or metallic tinsel static collectors which are grounded.

—To page 172

OPERATING COSTS REDUCED WITH TM ALLOY STEEL CHAIN!

The growing use of TM Alloy Steel Chain is resulting in lower chain costs everywhere, according to the S.G. Taylor Chain Company of Hammond, Indiana. Special Analysis Alloy Steel and Taylor's unique chain-making methods assure a product that has twice the strength, twice the safety factor and many times the life of wrought iron chain.

These features plus the fact that TM Alloy Steel Chain is heat-treated and never requires annealing... its

resistance to shock at all temperatures... its ability to withstand work hardness and grain growth add to the success of this chain. A complete line of slings, in a variety of sizes, with a choice of alloy steel attachments is available from stock. Two types of patented magnet chain assemblies are also available. TM Alloy Steel Chain is manufactured to customer's specifications as well. Contact your distributor today or write Dept. 7, S. G. Taylor Chain Company, Hammond, Indiana.

FOR BEST RESULTS

USE—

TM
ALLOY STEEL
CHAIN



● STRONGER
TM Alloy Steel Chain has twice the strength of wrought iron chain!

● SAFER
On a size for size basis TM Alloy Steel Chain has twice the safety factor of wrought iron chain!

● LASTS LONGER
This famous chain lasts five to fifteen times longer than wrought iron chain!

● COSTS LESS
TM Alloy Steel Chain's greater strength and longer life means lower chain costs for you.

TAYLOR MADE
A GREAT NAME IN
Chain SINCE 1873

S. G. Taylor Chain Co.
Dept. 7
Hammond, Indiana

Rush free catalog on Alloy Steel Chain.

Name _____

Address _____

Static Electricity

—From page 171

Where highly flammable vapors may be present, combs are not recommended. Chain drive or conductive rubber belts with metal pulleys should be used. Conductive belt dressings are helpful if they are renewed frequently.

Grounding shafting. Shafting and metal pulleys should be grounded with carbon, brass or spring brushes or contacts.

Powdered materials. Finely divided materials falling through the air or blown through pipes may generate static electricity and ignite explosive mixtures of dust and air. Machines should be bonded and grounded at a number of points.

Humidity maintained at or above 60 per cent at 70 F. helps to prevent accumulation of static charges. High humidity is obtained by special humidifiers or steam jets installed on blower type heaters.

Ionization of air is also used. Ionized air contains electrically charged particles which conduct static charges to grounded parts of machines. Ionization methods include gas flames, discharges of high potential electric current, and radiation from radioactive material. These methods require expert installation and maintenance and may involve fire or health hazards.

Body static charges may create a hazard in areas which contain highly flammable dusts, gases and vapors. Shoes with conductive soles or heels help to drain off the charges. Their conductive value is reduced by foot powders and by wool, silk or nylon socks. Cotton and rayon are safer.

Conductive floors should be installed in hazardous locations. Ordinary wax and other nonconductive floor finishes reduce the value of grounding measures.

Acid Handling

Acids, alkalis and other corrosives require a variety of specialized handling apparatus. Devices include buckets, dippers, funnels, pitchers, pumps and carboy inclinators.

Bags for carrying bottles of corrosive liquids lessen the risk of accidental breakage. The bag is of padded impermeable, acid-resistant material.

Materials used for equipment include rubber (natural and synthetic), stainless steel, and certain types of plastic. These materials are of many types which differ quite widely in their resistance to corrosives.

Crossover Bridges

Where loading docks are separated by railroad tracks, crossover bridges are needed. Some are of the draw-bridge type; others are mounted on four pillars that can be raised or lowered quickly by push-button control.

Hoists and Portable Cranes

A hoist is a mechanical device, suspended from overhead, used for raising or lowering loads through a vertical plane. Common types of hoisting apparatus include:

1. Block and tackle
2. Hand chain hoist
3. Electric hoist
4. Air-operated hoist

Block and tackle. Blocks threaded with fiber or wire rope are used for suspending scaffolds, raising objects, and other industrial purposes. When used to lift heavy materials or to hold loads suspended, as on heavy duty scaffolds, wire rope should be used.

Hand chain hoists may be used where overhead cranes cannot be installed on account of lack of head room. They also handle heavy pieces at machines. One hoist may handle the work at one or more machines.

Steel is recommended for load-sustaining parts. It will withstand sudden shock better than cast iron and is much lighter in weight for equal strength. Chain should be of best quality steel and should be welded.

Each hoist should be equipped with a braking device which automatically locks the load when hoisting is stopped.

Chains and sheaves should be lubricated at intervals, depending on atmospheric conditions.

Electric hoists range in capacity from $\frac{1}{8}$ ton to 20 tons. They are faster than hand hoists and less fatiguing for large loads. The light duty hoist uses link chain for lifting. The heavy duty type uses wire rope.

Limit stops prevent the hoist from traveling too far in case the operating handle is not released in time.

Air hoists operate on compressed air. They are used where sparks from electric equipment might be a hazard, or where smoothness of operation is important. The air hoist is limited in travel because of dependence on the air lines.

Grabs, grips and tongs of several types have been developed for use with overhead handling equipment, such as cranes, monorails, hoists, etc. Some can handle a variety of objects while others are highly specialized.

Portable floor cranes or hoists are mounted on wheels that can be moved from place to place, either by hand power or under their own power. These raise and lower loads in a vertical line. They will not rotate around a fixed point.

Portable cranes are useful in plants where overhead belting, shafting, etc., prevent the use of overhead cranes, and where service is not frequent enough to justify more expensive equipment. The lifting mechanism usually consists either of a winch with wire rope and block, or a chain hoist, operated by hand or by electric power.

Hoists operated by electric power should be effectively grounded to prevent shock in case of short circuit.

Jib cranes can lift, lower and rotate a load within the scope of the circle covered by a rotating arm or jib upon which runs a trolley. The jib is usually supported from a wall or column. A hoist, hand-operated air or electric, is suspended from the trolley. A substantial stop at the end of the jib arm prevents the trolley running off.



Well-constructed racks permit orderly storage of oil in drums and smaller containers. Storage house is of fire-resistant construction.

HERC-ALLOY

SLING CHAINS

**None better... after 20 years
still America's First and Safest**

Men who buy and use sling chains are influenced only by facts gained through experience. HERC-ALLOY Sling Chain preference by Safety Directors and Production Executives has been built up over the years not by what we claim, but by what HERC-ALLOY has done on the job.

To know more about HERC-ALLOY Sling Chains write for Data Book No. 3 which contains useful selection and application information.



COLUMBUS McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

District Offices: New York • Chicago • Cleveland

Other Factories at Angola, N. Y., St. Louis, Ill., St. Catharines, Ont., Can., and Johannesburg, South Africa.

What Is Good Housekeeping?

Good housekeeping is more than just using a paint brush and broom. In addition to cleanliness it involves the removal of unnecessary tools and equipment from the work area, the stacking and piling of materials correctly, hauling junk or salvage from locations, keeping floors clean and free of any slipping hazards, keeping buildings clean and free of debris and keeping tools clean and in good repair.

Anytime you hear someone refer to housekeeping as a "stepchild of safety" he is not thinking and analyzing what is taking place in his work area. Good housekeeping is one of the basic fundamentals of safety working conditions. Without it, little can be accomplished toward making a job safe and working conditions enjoyable.

Cleanliness and orderliness naturally lead to safer working conditions. The locations that are kept clean and where good housekeeping is a general rule have the best accident records. It seems to be a psychological fact that a man will take more care and pride in his work when it is being performed in a clean orderly place.

We can see no earthly use for poor housekeeping. When a job is finished, the location should be cleaned up; if done at that time it won't take long, all discarded or junk material can just as easily be put in the pickup or truck and hauled to the proper place, or piled in such manner that it is not a hazard



"Had to give my kid heck today. . . . Left his toys on the stairs. A guy can get hurt that way."

until picked up and taken where it belongs. If the right kind of housekeeping is practiced on the job, there will never be any necessity for a big clean-up campaign, as things will be taken care of currently.

Get your men in the right frame of mind by seeing that good housekeeping is practiced, and you will see that their work habits will improve in proportion to the degree of good housekeeping that is practiced.

Safety Aid, Stanolind Oil & Gas Co.

Spontaneous Ignition

WHEN the temperature of combustible material is raised to the kindling point and ignition occurs with no outside source of heat, the process is called "spontaneous ignition."

This type of combustion may be divided into two classes: **acute** cases which occur suddenly and explosively, and **chronic** cases where heat generates slowly until ignition takes place.

Most substances subject to acute ignition are well known. Examples are dry yellow phosphorus, which ignites on exposure to air, and quicklime, sodium, potassium and calcium carbide which heat when exposed to moisture.

Some materials may be stored for long periods, processed, packed and shipped with no signs of heating. The first warning may be the discovery of smoke. Uncertainty increases the hazard.

Before spontaneous ignition can occur there must be material that will burn, moisture, oxygen, and a certain minimum temperature. Presence of impurities in the combustible material may affect the danger of heating.

At ordinary temperatures some combustible substances oxidize slowly and under certain conditions reach their ignition point. These include vegetable and animal oils and fats, coal, charcoal, and some finely divided metals.

Rags and waste saturated with linseed oil or paint often cause fires. In such cases there is a large surface of combustible material exposed without means for generated heat to escape.

Best preventives are total exclusion of air or good ventilation. With small quantities of material, the former method is practicable. With large quantities, such as storage piles of bituminous coal, both methods have been used effectively.

Temperatures above 140 F are considered dangerous in coal piles. If temperatures rapidly approach or exceed that figure, it is advisable to remove the pile or rearrange it to provide better circulation of air.

Some agricultural products are susceptible to spontaneous ignition. Sawdust, hay, grain, and other plant products such as jute, hemp and sisal fibers, may ignite, especially if exposed to heat or to alternate wetting and drying. Circulation of air, removal of external sources of heat, and storage in smaller quantities are desirable precautions.

Fires in iron, nickel, aluminum, magnesium and other finely divided metals are sometimes attributed to spontaneous ignition. This is believed to result from oxidation of cutting or lubricating oils, or possibly from chemical impurities.

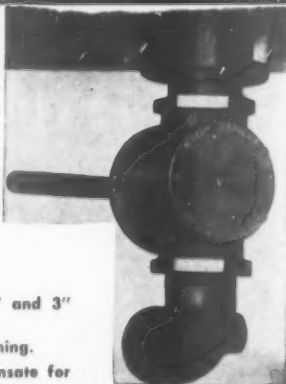
Detailed procedure for prevention and extinguishment of fires in materials subject to spontaneous heating have been recommended by the NFPA Committee on Spontaneous Heating and Ignition. These are found in National Board of Fire Underwriters publications, *Preventing and Extinguishing Fires in Soft Coal*, Bulletin No. 30, and *Spontaneous Ignition and Its Prevention*, Bulletin No. 51.

Cornell VALVE-TYPE TANK CAR UNLOADING FITTING

A Safety Valve-Type Fitting for Safe Unloading for All Types of Materials (Hot or Cold) from Tank Cars — One Man Operations — Light Weight.

Special Features

- ★ Flow is controlled at car discharge connection.
- ★ Standard Tank Car Threads are reduced to 2" and 3" pipe.
- ★ Plug-Type valve is fast operating and self-draining.
- ★ Plug clearance in valve is adjustable to compensate for handling very hot materials.
- ★ Swivel collar allows the outlet to be pointed in right direction when fitting it tight on car.
- ★ A 1" pipe connection permits air or steam cleaning of lines from car to pump.
- ★ All aluminum construction except valve plug which is brass.

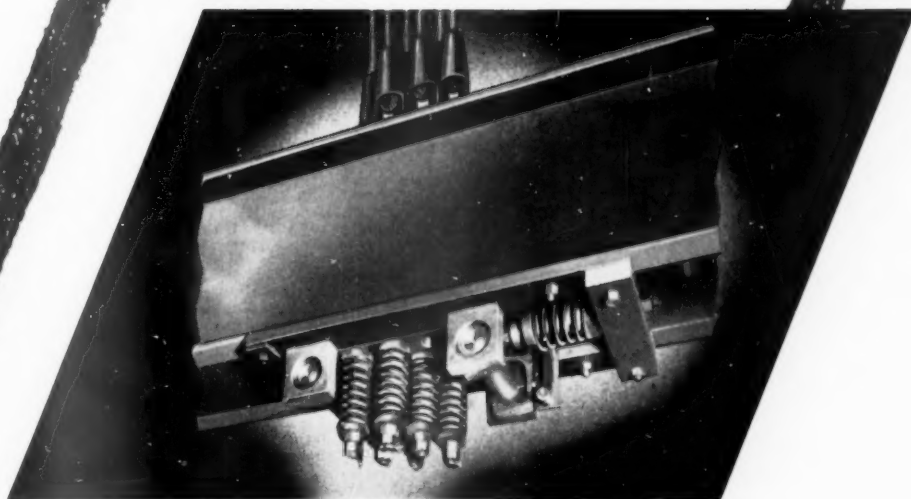


Weight is 19 pounds.
Overall length to outlet center is 14½".
MODEL MCV-390 for 3" Outlet.
MODEL MCV-290 for 2" Outlet.

Write for prices and information on special metals and sizes.

MEAD CORNELL AND COMPANY
P. O. BOX 2682N CLEVELAND 7, OHIO

Protect against elevator overloading



-with a Montgomery load limiter

The Montgomery Load Limitor goes into action when the elevator capacity exceeds the maximum load limit. It automatically weighs the load and prevents operation of car if overloading occurs. Here is low cost protection against costly overloading hazards. The Montgomery Load Limitor, the only device of its kind, is an exclusive Montgomery patent.

IMPORTANT FEATURES

FOR USE ON ANY ELEVATOR — This patent control can be installed on any make elevator. It can be used on any standard steel cage design of either freight or passenger elevator, regardless of make.

FOR USE ON 1:1 or 2:1 ROPING — The Load Limitor is designed for crosshead mounting for 1:1 roping and for dead end hitch mounting for 2:1 roping.

ELIMINATES BOUNCING — Precompression of

weighing springs eliminates bounce when load is placed on elevator platform.

INEXPENSIVE OVERLOAD INSURANCE — Reduces possibility of material wear, elevator failure, crashes, passenger injury, loss of plant efficiency and production shutdowns.

MANY NOW IN USE — The elevators of scores of the nation's prominent industrial plants, business and office buildings are protected against overload hazards by Montgomery Load Limitors.

WRITE FOR DESCRIPTIVE FOLDER FOR COMPLETE DETAILS

MONTGOMERY ELEVATOR COMPANY

GENERAL OFFICE AND FACTORY — MOLINE, ILLINOIS

Branches and Sales Representatives in all principal cities

Manufacturers of Quality Passenger, Freight and Hydraulic Elevators for over 60 Years



COMING EVENTS



In the Field of Safety

Mar. 16-21, Chicago

National Institute for Safety Council Administration (NSC Headquarters). Noble Dutton, Field Organization, National Safety Council, 425 North Michigan Ave., Chicago 11.

Mar. 24, Madison, Wis.

Canners' Safety Institute (Hotel Loraine).

Mar. 24-27, New York

Twenty-third Annual Greater New York Safety Convention and Exposition (Hotel Statler). Paul F. Stricker, executive vice-president, Greater New York Safety Council, 60 East 42nd St., New York 17.

Mar. 30-31, Boston, Mass.

Thirty-second Annual Massachusetts Safety Conference and Exposition (Hotel Statler). Edgar F. Copell, president-director, Massachusetts Safety Council, 31 State St., Boston 9, Mass.

Mar. 30-31, Houston, Tex.

Texas Safety Association, 14th Annual Conference (Rice Hotel). J. O. Musick, general manager, 830 Littlefield Bldg., Austin, Tex.

Apr. 9-11, Kansas City, Mo.

Central States Safety Congress (Hotel President). George M. Burns, director, Kansas City Safety Council, 419 Dwight Bldg., Kansas City 6, Mo.

Apr. 14-15, Indianapolis, Ind.

Central Indiana Safety Conference (Claypool Hotel). Jack Gunnell, Indianapolis Chamber of Commerce, 320 N. Meridian St., Indianapolis 11, Ind.

Apr. 14-16, Columbus, Ohio

Twenty-third All-Ohio Safety Congress and Exhibit. (Deshler-Wallick Hotel). James H. Fluker, superintendent, Division of Safety and Hygiene, The Industrial Commission of Ohio, Columbus 15.

Apr. 20-21, Toronto, Ont.

Industrial Accident Prevention Association, Annual Conference (Royal York Hotel). R. G. D. Anderson, 600 Bay St., Toronto 2, Ont.

Apr. 21-23, Grand Rapids, Mich.

Michigan Safety Conference and Exhibit. (Civic Auditorium). Elon J. Schantz, executive secretary, c/o Consumers Power Co., 129 Pearl St., N. W., Grand Rapids 2, Mich.

Apr. 21-23, Niagara Falls, N. Y.

Thirteenth Western New York Safety Conference (Hotel Niagara). E. C. Hohlstein, executive secretary, c/o Bufovak Equipment Division, Blaw-Knox Co., 1543 Fillmore Ave., Buffalo 1, N. Y.

Apr. 22-24, Charleston, V. Va.

West Virginia Safety Council, Inc. Annual Conference and Exhibit. Mrs. W. C. Easley, acting managing director, 316 Masonic Bldg., Charleston, V. Va.

Apr. 23, Bridgeport, Conn.

Eighth Annual Connecticut Industrial Safety Conference. (Hotel Stratfield). H. R. Erickson, c/o Chase Brass & Copper Co., Waterbury, Conn.

Apr. 27-29, Phoenix, Ariz.

Western Safety Conference, Inc., 15th Annual Conference and Exhibit. H. E. Hodgson, secretary, 310 Luhrs Bldg., Phoenix, Ariz.

Apr. 28-30, Pittsburgh

Western Pennsylvania Safety Council, 28th Annual Safety Engineering Conference and Exhibit. Harry H. Brainerd, executive secretary, 605 Park Bldg., Pittsburgh 22, Pa.

Apr. 29, La Crosse, Wis.

Lower Mississippi Valley Safety Conference.

May 6-8, Oklahoma City, Okla.

Annual Oklahoma Safety Conference. (Biltmore Hotel). Lloyd F. Palmer, manager, Oklahoma Safety Council, Inc., 1600 N.W. 23rd St., Oklahoma City, Okla.

May 7, Watertown, Wis.

Rock River Valley Safety Conference.

May 7-8, Baltimore, Md.

The Governor's Safety-Health Conference and Exhibit. (Lord Baltimore Hotel). Joseph A. Haller, director of safety, State Industrial Accident Commission, Equitable Bldg., Baltimore 2, Md.

May 7-9, Roanoke, Va.

Nineteenth Annual Virginia State-Wide Safety Conference (Hotel Roanoke). William M. Myers, managing director, Richmond Safety Council, 49 Allison Bldg., Richmond 19, Va.

May 11-13, Syracuse, N. Y.

Central New York Safety Conference and Exposition. Walter L. Fox, manager, Safety Division, Chamber of Commerce, Syracuse, N. Y.

May 13, Allentown, Pa.

Twenty-sixth Annual Eastern Pennsylvania Safety Conference. Harry C. Woods, manager, Lehigh Valley Safety Council, 602 East Third St., Bethlehem, Pa.

May 13-15, Winston-Salem, N. C.

Twenty-third Annual North Carolina Statewide Industrial Safety Conference. (Robert E. Lee Hotel). H. S. Baucom, safety director, North Carolina Industrial Commission, Raleigh, N. C.

May 14, Green Bay, Wis.

Fox River and Lake Shore Safety Conference.

May 21, Waukesha, Wis.

South East and Lake Shore Safety Conference.

May 21-22, Duluth, Minn.

29th Annual Conference, Lake Superior Mines Safety Council (Hotel Duluth). John A. Johnson, chief, Accident Prevention and Health Div., Region V, U. S. Bureau of Mines, 18 Federal Bldg., Duluth 2, Minn.

June 4-6, Portland Ore.

Nineteenth Annual Forest Products Safety Conference. (Multnomah Hotel). Pat Reiten, secretary, Simpson Logging Co., Shelton, Wash.

June 11, Superior, Wis.

Upper Mississippi Valley and Lake Superior Safety Conference.

June 18, Rhinelander, Wis.

Wisconsin River Valley Safety Conference.

Sept. 16-17, Harrisburg, Pa.

Pennsylvania Industrial Safety Conference. (Hotel Penn Harris). Frank K. Bohl, deputy secretary, Department of Labor and Industry, Room 304 South Office Bldg., Harrisburg, Pa.

Sept. 17-18, York Harbor, Me.

Twenty-sixth Annual Maine State Safety Conference. (Marshall House). A. F. Minchin, secretary, Industrial Safety Division, Department of Labor and Industry, Augusta, Me.

Oct. 19-23, Chicago

Forty-first National Safety Congress and Exposition. (Conrad Hilton Hotel). R. L.

the
**LIGHTER
SIDE**

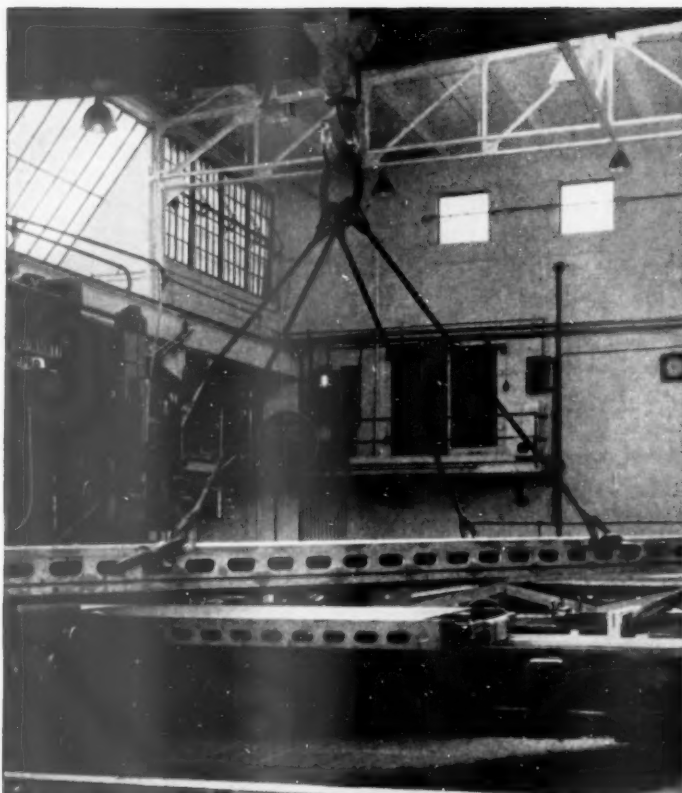
NATIONAL SAFETY COUNCIL



Forney, general secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11.

Nov. 17-18, Cincinnati, O.

Third Annual Greater Cincinnati Safety Conference. (Sheraton-Gibson Hotel). Kenneth R. Miller, executive director, Greater Cincinnati Safety Council, 1203 Federal Reserve Bank Building, Cincinnati 2, Ohio.



Bethlehem No. 412 eight-part-braided bridle sling.



Bridle consisting of two braided sling legs.

the Bridle

A quick, easy method of lifting with Bethlehem Wire Rope Slings

Many lifts can be made most easily and economically with the bridle-sling hook-up. Two such lifts are pictured here, both using Bethlehem slings.

The bridle arrangement permits good balance of load and an even distribution of weight. It also minimizes any tendency of the load to turn or spin.

Bethlehem slings are ideal for this common type of lift. They're so flexible; they hug the contours of the load and fit easily over any sort of hook. And they're very strong, being made entirely of Bethlehem's toughest, most durable wire rope, the Purple Strand grade.

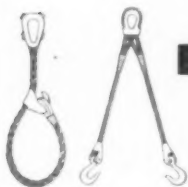
Another thing you'll like is the workmanship that goes into these slings. They are made by craftsmen, highly-

responsible men in a highly responsible job. You simply cannot find a better grade of workmanship than you get in Bethlehem slings.

We make just about every type of sling — grommet, braided, single-rope, and all the rest. If we can help you determine the kind of sling you need, or help you with any lifting problem, call or write us. Our engineers are always at your service and will gladly co-operate.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation. Export
Distributor: Bethlehem Steel Export Corporation



BETHLEHEM WIRE ROPE SLINGS
MAKE THE TOUGH LIFTS EASY



"Couldn't Kink Them, Even When We Tried," ... Tuffy Slings

Other Specially
Designed Tuffys For
Special Uses



Tuffy SCRAPER ROPE

Created to stand up under stresses and strains imposed by wheeled scrapers. Flexible to withstand sharp bends ... stiff enough to resist looping and kinking when slack.



Tuffy DRAGLINES

Finer construction technique and toughened materials pay off in maximum abrasive resistance. Provides extra flexibility with no loss in quality ... spools better and rides better on grooves, huge drum when casting.



Tuffy DOZER ROPE

A special, tougher construction for tough dozer service on 150' reels for mounting on the tractor just back of the wedge socket. By feeding through only enough rope from the reel to replace section damaged on the drum, users report up to 300% savings in rope costs and half the down time.

Braided Construction

Lets **Tuffy** Slings

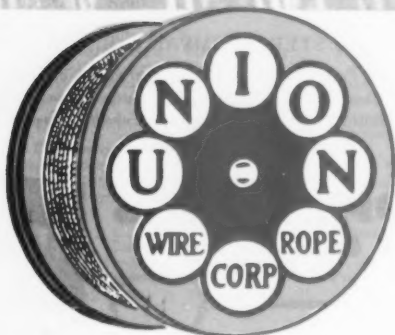
Straighten Out with No Damage

This Pennsylvania construction company owner proved to himself that Tuffy Slings are extra flexible, extra strong. He knows the patented, braided construction actively fights off knots and kinks ... and after using Tuffy Slings for over a year, he knows they last longer under most rugged use!

Some stranded wire ropes may have the strength needed for sling work, but they are hard to handle and hitch because of their stiffness. Also, they're subject to kinking and material damage when bent around small radii.

When you use Tuffy Slings, you're sure of maximum flexibility *plus* strength, thanks to Tuffy's patented 9 part machine-braided wire fabric construction. The 9 parts are interlaced in an exclusive way that forms a fabric that can be repeatedly bent around abrupt corners. And even when one of the strands is cut or broken, there's no stranding!

* Name Furnished on Request



union

Wire Rope

corporation

Specialists in Wire Rope and Braided Wire Fabric

Says

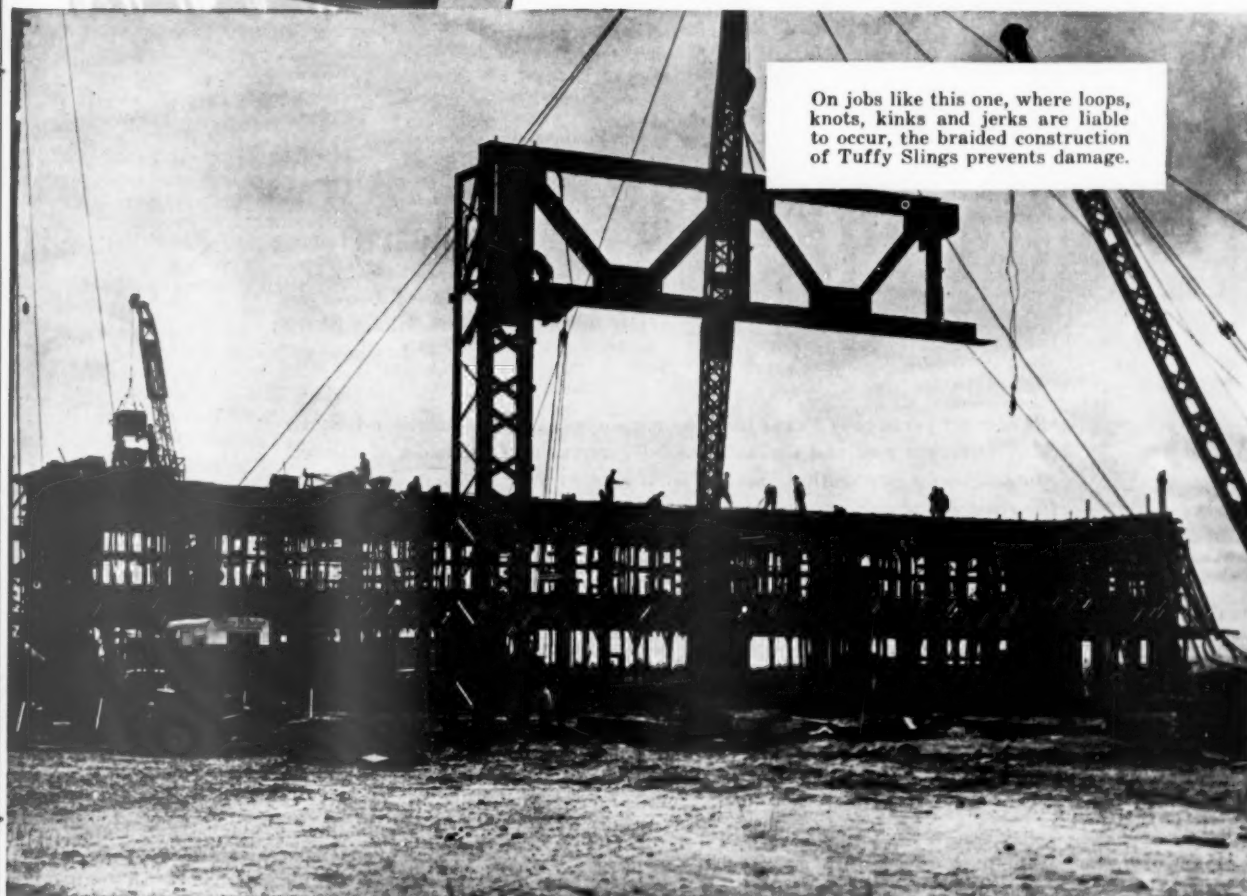
**Owner of Eastern
Construction
Company*,
Speaking
of Tuffy
Slings.**



SEND FOR THIS **FREE** Sling Handbook

Get This Sling Handbook Absolutely Free!

Contains plenty of factual, useful data on 12 braided sling types . . . various types of sling fittings, 30 illustrations of sling uses, information on splicing Tuffy Slings as well as Wire Rope. It's the only handbook of its kind in the braided sling field, and it's yours for the asking! Get your free copy of the new Tuffy Sling Handbook . . . mail the coupon below *today!*



TEAR OFF
AND MAIL COUPON

TODAY

union
Specialists



Wire Rope corporation

In Wire Rope and Braided Wire Fabric

2224 Manchester Ave., Kansas City 3, Mo.

Please send my **FREE** copy of the new Tuffy Sling Handbook and Rigger's Manual.

Firm Name _____

By _____ Title _____

Address _____ City _____ State _____



*"The enthusiastic response
of our employees . . ."*

ALDEN G. ROACH

President, Columbia-Geneva Steel
Division and Consolidated Western Steel
Division, United States Steel Corporation

"It is most gratifying to me that the employees of the Columbia-Geneva Steel Division and the Consolidated Western Steel Division of United States Steel Corporation have accorded meaning to their belief that the security of our nation rests upon our cooperative effort. The enthusiastic response of our employees made me doubly glad we conducted a person-to-person canvass for the Payroll Savings Plan for U. S. Defense Bonds."

The experience of Columbia-Geneva and Consolidated Western Divisions of United States Steel Corporation is not an isolated one.

Since January 1, 1951, hundreds and hundreds of companies have conducted person-to-person canvasses of their plants and offices. In every instance, employee participation in the Payroll Savings Plan has increased—sometimes from a low figure—to 60, 70, 80%. In a number of plants, participation passed the 90% mark.

The explanation is simple.

Employees *want* to provide for their future security.

Given an opportunity to enroll in the Payroll Savings Plan they respond immediately—as evidenced by the fact that more than 2,000,000 men and women have joined the Payroll Savings Plan since January 1, 1951.

The monthly take-home savings of the 7,500,000 now in the Payroll Savings Plan totals \$150,000,000 per month—and growing rapidly.

As a step toward *your* personal security, and the security of your associates, bring this page to the attention of your top executive. Tell him that—

- a person-to-person canvass of your plant can be conducted without pressure, prize awards or other stimulation. (In many plants, employee organizations have undertaken the actual distribution of Payroll Savings Application Blanks.)
- The Savings Bond Division, U. S. Treasury Department, Suite 700, Washington Building, Washington, D. C., will gladly help your company with suggestions, posters, envelope stuffers and other aids.

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

NATIONAL SAFETY COUNCIL



National Safety News, March, 1953

SECTION 6

MACHINE OPERATION AND GUARDING

Guarding the Machine

MACHINERY is involved in approximately one-fifth of all compensated occupational injuries in manufacturing industries. More significant is the fact that 25 per cent of all permanent disabilities result from machinery accidents.

Among machines which figure frequently in accidents are power presses and woodworking machines, such as circular saws, jointers and planers.

The majority of machine accidents occur at the point of operation, although not always during the normal operation of the machine.

Much attention has been given to machine guarding and many effective safeguards have been developed. However, there are many types of machines used in industry and a great variety of operations performed on these machines. This, and the fact that human beings frequently do unexpected things, often makes positive protection extremely difficult.

Many machines are quite safe for normal operation. It is quite unnecessary for an operator to place his hands in the danger zone but sometimes it is done. Guarding, therefore, must be planned to protect the individual against his own lapses as well as against the normal hazards of the job.

Some newer types of machines are built with moving parts enclosed, presenting a trim, streamlined appearance as well as greater safety. Pressure lubrication reaches remote bearings

without exposing the oiler to hazard. Housekeeping is also improved.

Color is a safeguard. Highlighting the point of operation with light tints which stand out against the darker background of the machine enables the operator to watch the work with less effort on the eyes. Strong colors which give warning when a guard is missing are also helpful.

Where built-in guards are not practicable, as in the case of older machines, or machines requiring special guards, standard types of commercial guards are recommended. Guards for such machines as power presses, circular saws, paper cutters, and others, are designed to fit most sizes and styles of machines.

A guard which interferes seriously with output is not likely to be popular with either the operator or the management. Planning a guard, therefore, should be done in cooperation with the supervisor and the operator.

Guard design must often be approved by state factory inspectors and insurance engineers. Since state codes are not uniform and at best represent only minimum requirements, the codes and recommendations of the American Standards Association are the best guides.

Point-of-Operation

Guarding the point of operation effectively is usually more complicated than enclosing power-transmission apparatus.

Point-of-operation guards are installed at those parts of machines where cutting, shaping or forming is performed, and at other points where there may be a hazard to operators inserting or manipulating stock.

Guards should protect operators both from moving machine parts and from moving materials. This may be done by safeguards of the following types:

IN THIS SECTION

Guarding the Machine	181
Electric Equipment	182
Hand and Power Tools	183

1. Mechanical feeding and ejecting.
2. Two-hand control devices.
3. Redesign of machine parts so that it is impossible for the operator to get into the danger zone.
4. Devices that interrupt movement of tools or machines while any part of the body is in the danger zone.
5. Devices that pull or push hands away from the danger zone.
6. Barricades, covers, hood guards and other enclosures.
7. Interlocking devices.

Power Presses. Automatic feeding and ejecting devices, enclosure guards, sweep guards, hand or arm "pull-back" guards, and stroke limitation, are among the means used to control the hazard of operation.

Few types of guards provide 100 per cent protection. For instance, an automatic or dial feed may make it unnecessary, but not impossible for an operator to place his hands in the danger zone. But frequently an operator cannot resist the impulse to straighten a misplaced part just before it passes under the ram.

Automatic feed should be supplemented by a substantial enclosure which isolates the point of operation. This provides much safer operation, especially on slow-moving presses.

Machine parts are sometimes adjusted to minimize the hazard of operation.

—To page 184



Guards and controls on air conditioning equipment.

MECHANICAL APPARATUS INSPECTION

Check the points listed below. Make recommendations to cover unsatisfactory conditions so that they can be corrected promptly.

POWER TRANSMISSION ENCLOSURES OR GUARD RAILS

	OK
Pulleys, flywheels	<input type="checkbox"/>
Gears, sprockets, chains	<input type="checkbox"/>
Belts: vertical, horizontal	<input type="checkbox"/>
overhead horizontal	<input type="checkbox"/>
Belt shifters	<input type="checkbox"/>
Keys, setscrews, collars, couplings	<input type="checkbox"/>
Shafting	<input type="checkbox"/>
Clutches	<input type="checkbox"/>
Lubrication facilities	<input type="checkbox"/>

CONTROLS

Electrical starting devices	<input type="checkbox"/>
Lockout devices	<input type="checkbox"/>
Tripping devices: foot, hand	<input type="checkbox"/>

POINT OF OPERATION GUARDS

In place	<input type="checkbox"/>
Condition satisfactory	<input type="checkbox"/>
Correct adjustment	<input type="checkbox"/>



SAFETY INSTRUCTION CARD No. 778
National Safety Council PRINTED IN U.S.A.

Electric Equipment

ELECTRICITY has contributed much to modern industry in efficiency, cleanliness and safety.

The flexibility of electric power permits installation of motors on individual machines, or for driving groups of machines. This makes it possible to dispense with shafting, belts and other transmission equipment which require extensive guarding and interfere with light, ventilation and housekeeping.

Installation, maintenance and use of electric equipment have introduced new hazards but these are well known and effective control measures can be applied.

Rules for the use of electric equipment are given in numerous publications, including the *National Electrical Safety Code*, which deals with prevention of injuries, and the *National Electrical Code*, which deals with fire protection.

Electrical equipment which bears the approval label of recognized testing laboratories has passed exacting tests and can be used with confidence.

Installation. All electrical work should comply with applicable codes.

Transformers, control boards, starting rheostats, and other apparatus should be placed where there is the least danger of accidental contact with energized conductors. All exposed current-carrying parts should be fur-

ther protected by enclosures, railings or special guards.

Motors should be mounted so as not to interfere with normal plant traffic. Non-enclosed type motors should be located in areas relatively free from dust, moisture, or corrosive vapors.

Isolating equipment. When practicable, transformers, control boards and other accessories should be placed in special rooms to which only authorized persons have access.

If a separate room is not feasible, enclosures should be built around equipment having exposed conductors. Enclosures made of metal should be effectively grounded.

Barriers may be used to prevent accidental contact with electrical equipment. Frames may be made of wood, rolled metal shapes, angle iron or pipe. Filler may be of woodstrips, sheet metal, perforated metal, expanded metal, wire mesh, or shatter-proof transparent material.

Some protection can be obtained by elevating wires and current-carrying parts at least eight feet above any working level to which employees (other than qualified electricians) have access.

Where long metal parts, such as rods, bars and pipes are handled, partial enclosures or barriers should be provided

to prevent contact with overhead electrical installations.

Warning signs should be displayed near exposed current-carrying parts, especially high-voltage installations.

Many standard machine-guarding practices apply to electric equipment, but there are certain hazards peculiar to electricity. Particular attention should be given to the *National Electrical Safety Code* and the *National Electrical Code*.

Protective grounding is necessary for exposed non-current-carrying metal parts if the equipment is supplied by means of metal-clad wiring, when installed in a wet location, and when it operates with any terminal at more than 150 volts to ground. Parts to be grounded include motor frames, cranes, cases of transformers and oil switches, wiring conduit, and metal lamp sockets.

Frames of all portable motors which operate at more than 50 volts to ground should be grounded.

Motors should be of the type and size required for the load and for conditions under which they must operate. Overloading over long periods, use of non-approved motors in areas containing flammable vapors or dusts, and defective wiring should be avoided.

Motor windings should be protected from metal particles, dirt, dust, lint or other material which may damage the windings or become ignited. In areas containing flammable dust and gases, motors designed for hazardous locations should be installed. The *National Electrical Code* should be followed.

Grounded metal enclosures are recommended for starting rheostats, switches, fuse panels, and other operating accessories. In some devices, both switch and fuses are enclosed in a cabinet so arranged that the switch can be operated without opening the cabinet. The switch is interlocked through a cam so that the fuses are inaccessible until the switch is opened.

Another type of enclosed switch permits the door of the cabinet to be opened with a key, even though the switch is closed. With either type of cabinet, it is possible to padlock the door open or closed, and the switch can be padlocked in the open position.

Maintenance and repair work. When repair work is being done on motors, their controlling devices, or the machinery they drive, the circuit should be de-energized by opening the necessary switches and locking them in the open position.

If a switch cannot be locked open, it should be blocked and a tag attached showing that the switch is to be closed only by the man whose name appears on the tag. Warning signs should be displayed.

Wiring depends upon type of building construction, size and distribution of electrical load, exposure to dampness or corrosive vapors, location of equipment, and other factors. For most

—To page 191



An engineer conducts an overload test on an enclosed switch at Underwriters' Laboratories, Inc. Switch must operate satisfactorily for 50 cycles while making and breaking an overload equivalent to 150 per cent of its maximum current rating, or the locked rotor current of a motor, if the switch is rated in horsepower.

Hand and Power Tools

HAND TOOLS of various types are used in even the smallest shops. Since their use involves accidental contact with cutting edges or severe blows, they are responsible for numerous injuries on the job.

Estimates of the percentage of disabling injuries caused by hand tools range from 5 to 15. While many of the injuries involve only first-aid treatment, these slow down work and offer chances for infection.

Hazards are increased by selection of the wrong tools for the job, neglect of maintenance, and the idea that anybody can use them.

Portable power tools have the hazards of hand tools increased by high speed operation and more severe blows. With electric tools there is also the hazard of shock.

Types of Tools

Tools commonly used in industry are of the following general types:

1. **Metal Cutting**—Cold chisels, marking tools, bull chisels, hack saws, tin snips, cutters.
2. **Wood Cutting**—Chisels, gouges, saws, axes, adzes, hatchets, knives, Brad awls.
3. **Lifting**—Levers, crowbars, jacks, hooks, shovels.
4. **Torsion**—Wrenches of various types, pipe tongs, screwdrivers, pliers.
5. **Striking**—Hammers, sledges, mauls, picks, punches.

Some tools belong in more than one classification. An ax, for example, is both a cutting and a striking tool.

Accident causes. One or more of four primary causes are responsible for in-

juries with hand tools. Following are examples:

1. A wrong or improvised tool—a file or screwdriver for prying; a wrench for hammering.
2. A defective tool—a burred chisel head; a dull saw or knife; a split maul handle; a tool of poor quality.
3. Tools incorrectly used—striking two hard-surface tools together; failing to take practice swing with sledge to adjust for clearance; pulling on pliers in line with face.
4. Tools not put away—wood chisel loosely laid in tool box; hammer left on edge of machine; knife left on table.

Selection. Tools for both routine and special work should be kept in stock or readily available. High grade tools are the best buy and the difference in initial cost is offset by longer life, reduced upkeep and lessened risk of accident.

Suitable arrangements should be made and responsibility placed for the purchase, handling and care of tools. The purchasing department should be kept informed of tool performance as a guide to future purchases.

Alloy steels have strength and toughness combined with light weight which justifies the higher cost for some jobs. Alloys are used for hammers, wrenches, screwdrivers, wood working tools, pliers, rivet sets, saws, knives and punches.

Some alloys offer resistance to mushrooming, and chipping but no tool should be subjected to unnecessarily rough use.

Non-ferrous hammers or mallets should be used for striking tempered or case-hardened tools. These hammers are usually made of copper, lead, bronze, brass, rawhide, or wood.

Handles. With hammers, sledges, axes, picks, etc., the greatest strain is where wood and metal join. An adequate supply of good handles should be kept in the toolroom. These should be straight-grained wood, free from splinters. Hickory, ash and maple are preferred. Handles should be fitted by an experienced person.

Insulated tools. For working around electric equipment, tools with insulated handles are frequently used. These provide desirable protection but are not a substitute for rubber gloves and other protective devices.

Marking tools. Steel stamps and holders for stamping identification marks on machine parts and other metal surfaces are available in alloys which resist mushrooming and do not chip readily.

Car movers. For moving cars on rails, car movers which do not slip readily are available. When two men are needed to move a car two car movers should be used. Ordinary crow bars should not be used.

The Tool Room

Centralized tool control facilitates uniform inspection and maintenance of tools. Special equipment, such as exhausted grinders and welding equipment permit uniformly good maintenance. Protective equipment, such as goggles, can be recommended and issued with the tools.

Centralized control also makes it possible to keep effective records on tool failure and helps locate unsafe conditions and unsafe acts. Tools exposed to less damage than with scattered storage.

A procedure can be set up so that the attendant can send tools in need of repair to a department equipped for reconditioning.

Some companies issue to each employee a set of numbered checks at the time of employment. These are exchanged for tools at the supply room. By this system the attendant knows where each tool is and can call it in for inspection at regular intervals.

In companies with jobs at several locations it is not always practicable to maintain a tool supply room. In such cases the foreman should inspect all tools frequently and take out of service those found defective. A check list for tools considered most hazardous is helpful.

Some workmen prefer to use their own tools rather than those furnished by the company. Privately owned tools should be subject to the same inspection as those owned by the company.

Carrying Tools

A workman should never carry tools which might interfere with his using both hands while climbing. A strong bag, bucket, or other container should be used for hoisting or lowering tools.

Chisels, screw drivers and pointed
—To page 195

TOOL KEEPERS (Important Responsibilities)

1. Issue only those tools that you know to be safe.
2. Permit no tool with a mushroomed head to leave the tool room; have all cold chisels, chisel bars, cutters or other shock tools with bad heads dressed before they are issued.
3. Keep the jaws of wrenches in good condition; warn workers against misusing them.
4. Keep all sharp-edged tools sharp; keep the edges protected while in storage.
5. If any tool shows signs of being improperly tempered, withdraw it from service; try to find the trouble and have it corrected.
6. Portable electric and pneumatic tools should be kept in the best possible condition; check frequently the condition of switches and control valves, electric cord and hose connections.
7. If a grinding wheel has been abused, give it the "ring test." (See Safety Instruction Card No. 108.) Know the safe speeds and how to mount and adjust the wheels.
8. Store grinding wheels so they cannot be abused.
9. When issuing goggles, make sure they are suitable for the work, and that they fit comfortably.



SAFETY INSTRUCTION CARD No. 136
Revised Nov., 1936

PORTABLE ELECTRIC TOOLS



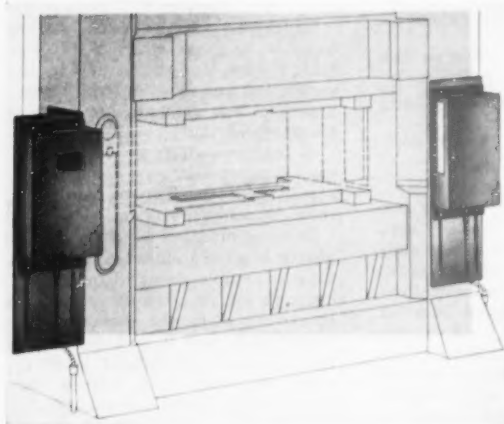
1. Use only equipment that is in good condition. Take good care of it.
2. Be sure the tool is properly grounded.
3. Report the following unsafe conditions:
Defective or broken insulation on cord.
Improper or poorly made connections to terminals.
Broken or otherwise defective plug.
Loose or broken switch.
Brushes sparking.
4. Do not overstrain the tool, thus overloading the motor.
5. Never use a portable electric tool in the presence of flammable vapors or gases, unless it is designed for such use.



SAFETY INSTRUCTION CARD No. 91
National Safety Council PRINTED IN U. S. A.

PHOTO ELECTRIC POWER PRESS GUARD

The **ECC** CURTAIN OF LIGHT is "fail-safe"



A modern adaptation of the "electric eye"

If operator's hands are near the die during closing stroke, press is stopped. This equipment protects operator even if a tube, or lamp, etc. should burn out. Is not affected by normal line voltage

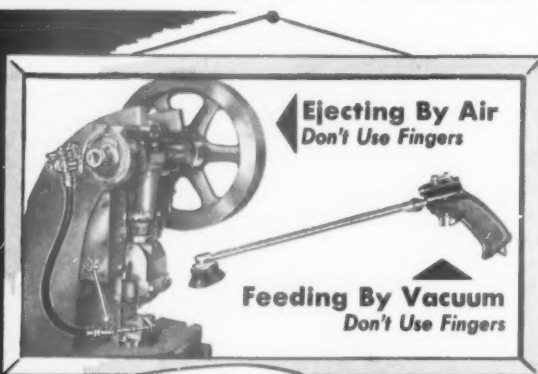
fluctuations. Uses continuous "curtain" of light of following standard widths: 1 inch, 4, 7, 12, and 23 inches. Rugged construction for rigorous factory usage. Bulletin with full information is available.

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This PICTURE, Can be worth \$1,000⁰⁰ in the SAVING of FINGERS



Amputated Fingers COME HIGH!

These figures are based on maximum rate of Illinois Workmen's Compensation from Division of Statistics and Research, Illinois Industrial Commission. (Figures for other states are higher).



LITTELL AIR BLAST VALVES

Pieces forced out safely by air. Blank parts weighing up to 2 lbs. are blown out of press with a standard Air Blast Valve.

LITTELL Pres-Vac SAFETY FEEDERS

Blanks fed from a safe distance of 14 inches. Press-Vac operates from compressed air at 45 lbs. pressure which passes through a venturi to create a vacuum.

F. J. **Littell** MACHINE CO. AIR DIVISION

4165 RAVENSWOOD AVE. CHICAGO 13, ILL.

District Offices: Detroit and Cleveland



Machine Guards

—From page 181

ation, as in limiting the stroke on a press so that the fingers cannot enter between the dies.

Die design. On punch and forming presses it is frequently necessary to install guards of a different type for each set of dies used. For this reason, enclosure guards should always be considered integral parts of the dies.

Hood enclosure and cover guards are used on woodworking machines and many other types of equipment. Frequently, such guards are automatic in action. Others are of rigid construction.

Nip hazards, such as rubber mills, calender rolls, dough breaks, and others, can be protected by sensitively adjusted controls that operate dynamic brakes when contacted by any part of the operator's body. These guards stop the machine in the shortest possible time.

Two-hand controls are frequently installed on power presses, bakery machinery, guillotine paper cutters, and other types of equipment where barrier guards are not practicable.

Interlocking devices are used on centrifugal extractors, dough mixers, some types of pressure vessels, tumblers and other machines that require covers or barricades in place before the starting control can be operated.

Supervision. Operators occasionally make safety devices ineffective in an attempt to speed up output or make operation easier. This is especially frequent with two-hand controls. Operators should be warned of the hazards involved and instructed in the use of safety devices.

Frequent checks should be made to see that instructions are observed and that safety devices are functioning.

Photoelectric guards. The photoelectric relay consists of a beam of light. When this is broken by the press operator's hands the start or completion of the ram stroke is prevented. The photoelectric relay responds instantaneously, is completely automatic, takes up little space, is easily installed and economical to maintain. Against these advantages are comparatively high installation cost and limited uses.

On presses with friction clutches, the ram travel will stop immediately when the light beam is broken. This method is not effective on presses with positive clutches because the ram will continue its stroke until the end of its cycle. The guard should be operated from a closed electric circuit so that current interruption will automatically prevent the press from tripping.

Power Transmission

Power transmission apparatus includes shafting, belting, pulleys, gears, —To page 190



Operator confidence soars—and so does production—with the Schrader Press Control. For this control is definitely a two-hand device. It is designed so that the hands that feed the die must also operate the press. Both hands must be used simultaneously for each operation of the press and cannot stray into the danger zone when the ram comes down.

This *increased safety* of Schrader's Press Control lets operators build a worry-free rhythm that puts new speed in your presses in just a short time.

What's more, Schrader Controls end the fatigue common with mechanical foot pedal operation—a Schrader-

Reduce Danger Here

equipped press can be run as easily as an ordinary typewriter.

Wherever you have a power press—or any machine with a mechanical clutch—there's a chance to increase safety . . . boost operator confidence and thus increase production with a Schrader Control.

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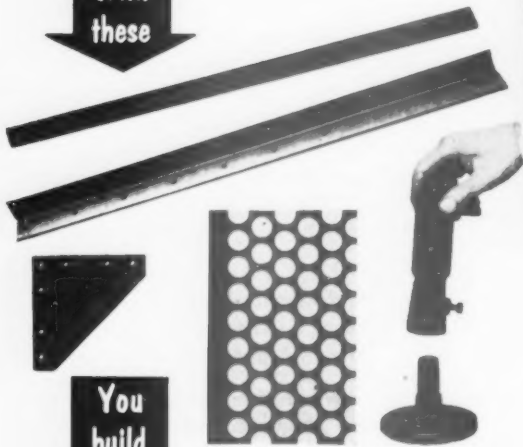
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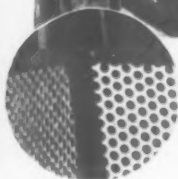
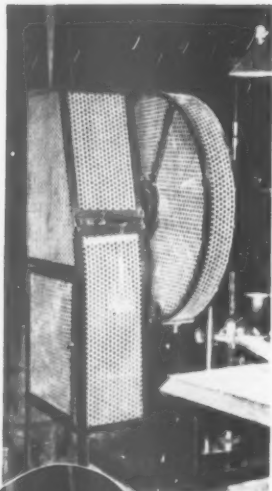
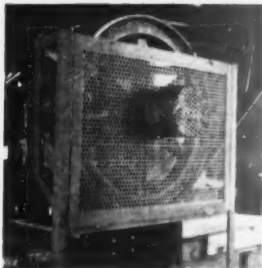
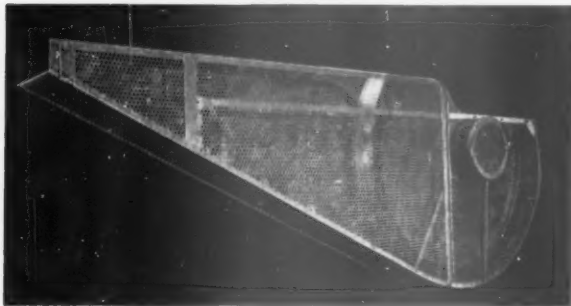
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With H & K
Standardized
SAFETY GUARD PARTS
Safe — Economical —
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No special tools are needed! Your own maintenance man can fabricate practically any size and shape of guard from these sturdy parts. Properly constructed, guards made of H & K Standardized Parts will receive prompt approval of the safety inspector. Using our 1/8" or 3/16" thick perforated angles and bands, bolted together with our perforated gussets, a rugged frame can be built right at the machine being guarded — no drawings are necessary — constructed like a mechanical toy. Cover the frame with perforated sheets. Mount floor supported guards on our detachable floor post and sockets for easy removal — so economical — so easily built. You will have excellent visibility — long life — immediate safety approval.

For punch press die guards use our 16 gauge steel slotted strips (available in 10' strips or sheets) to build a guard for every die — perfect protection at lowest cost — sturdy yet providing excellent visibility.

Suggestion

Effect further economy in your own plant by assembling H & K Safety Guards during idle or slack time.

Punch Press Guards



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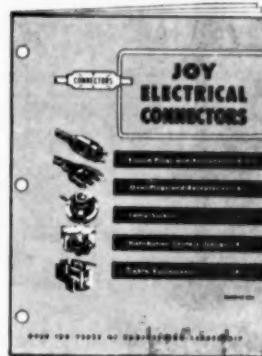


Safety is no accident

When JOY electrical connectors are on the job

In Industry . . . metallic dust, grime, moisture and careless handling are dangerous enemies of electrical connector performance. Constantly present around most installations they quickly try to increase resistance, crack insulation, fray wiring and corrode contacts, thereby shortening the life span and reducing the safety of electrical connectors. Fortunately, JOY plugs and receptacles are little affected by these conditions. Vulcanized to their cable as one-piece molded Neoprene units, they can't crack . . . won't lose shape . . . and require no special consideration to insure a long life of safe, efficient service. Hundreds of styles and sizes are now available for Industrial needs. So for safety's sake remember JOY when you next need electrical connectors . . . and in the meantime ask for your free copy of Bulletin MC108. It provides valuable additional information on Industry's favorite plugs and receptacles.

BULLETIN MC108



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"Safety" Wedge-Grip Stamps



Wedge-Grip Hand Holder Model H (Cat. No. 128)



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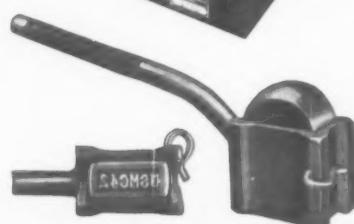
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"Safety" Heavy Bevel Letter and Figure Stamps



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THE NEW AND IMPROVED **POSSONS POSITIVE DEVICE**

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**Positive Safety
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A type for every kind of press. Meets all safety requirements. More than 25,000 in use! Write today for catalog and names of users near you.

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NOLAN ONE-MAN CAR DOOR OPENER



Opens Doors in 20 seconds or less



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No gangs needed. No mangled limbs or loss of life. A few quick pulls on anchor chain gets any door open in a jiffy. The NOLAN saves its low initial cost in first hour of operation.

New safety and efficiency features now make the Nolan One-Man Car Door Opener a more necessary labor-saving, money-saving help than ever before.

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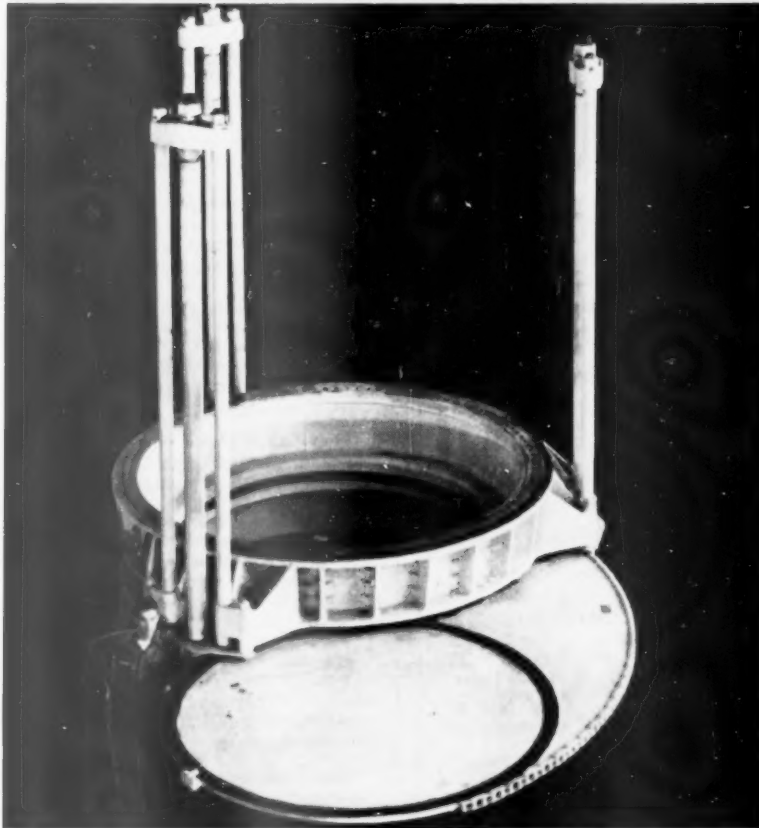
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NOLAN Model-H Car
Door Openers now.
Catalog on request.

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THE NOLAN COMPANY
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HOW A FORCE OF NATURE IMPROVES STEEL MILL SAFETY



Designed to protect men and equipment, this heavy duty Bailey Valve was produced for one of the nation's major steel makers. Although its diameter is 120" and its weight is close to 42,000 lbs., it is precisely machined to assure a tight, positive gas seal.

AN UNFAILING force of nature—the linear expansion and contraction of steel—is being used to increase steel mill safety. This powerful force, applied to Bailey Thermal Expansion Goggle Valves, provides a safe, dependable means of positive shutting off large gas mains in emergencies or for repairs.

The Function of Goggle Valves

Ranging in diameter from 36" to 120", this type of valve long has been indus-

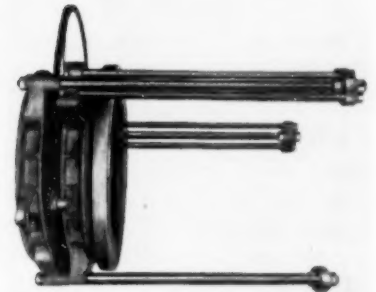
try's standard method for controlling gas in the large mains for blast furnaces, gas washers and boilers. They take their name from one of their component parts—a large, moveable plate shaped like a pair of aviation goggles. This plate has one "goggle" open, the other of solid steel. When a gas main is in operation, the open goggle allows gas to flow through it freely; when the gas is to be shut off, the plate is moved until the closed

goggle blocks the main, forming a tight, leak-proof seal.

BAILEY THERMAL EXPANSION GOGGLE VALVES

Safety and efficiency in closing the larger sized gas mains are provided by Bailey Thermal Expansion Goggle Valves. In them, the powerful force of linear expansion and contraction of three steel tubes is used to free or clamp the goggle plate—providing an absolutely gas-tight seal.

In operation, steam is passed into the tubes, which are spaced evenly around and perpendicular to the rigid steel flanges of the valve. The resulting expansion frees the heavy goggle plate so it may be swung to the open or closed position. When the steam is shut off, contraction of the tubes takes place, closing the flanges tightly against the goggle plate. Since both sides of the plate are machined to conform to the machined edges of the valve flange, Bailey Valves are leak-proof in both



Bailey Thermal Expansion Goggle Valves are produced in diameters from 36" to 120".

open and closed positions.

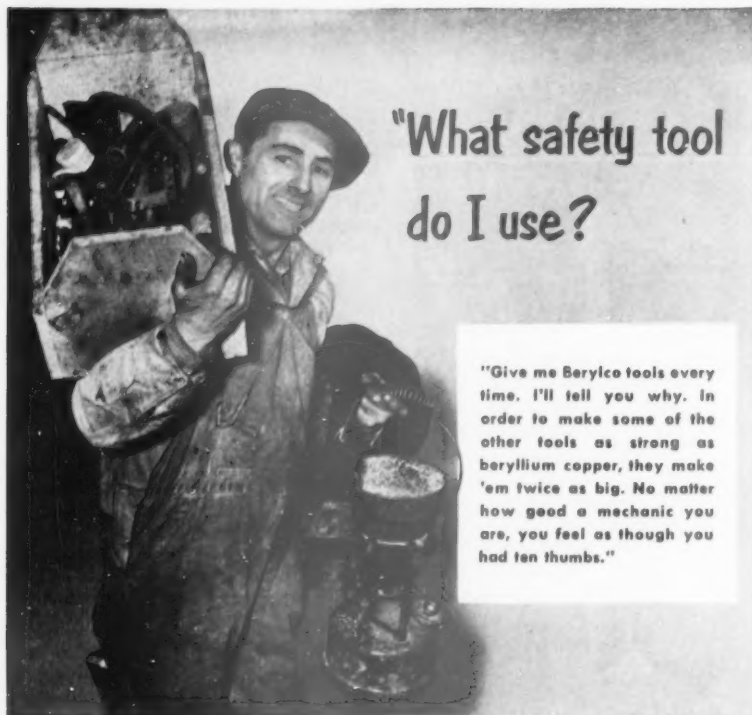
Sound design and precision manufacture are combined in these valves to assure the ultimate in safety and reliability. They have been thoroughly proved on the gas mains of blast furnaces, gas washers and boiler plants. Bailey Thermal Expansion Goggle Valves are completely dependable in hot or cold, dirty or clean gas mains.



These valves are in service on an Elex Precipitator. In this view the goggle plates are in the open position.

WILLIAM M. *Bailey* COMPANY

1221 Banksville Road
Pittsburgh 16, Pa.



Berylco safety tools are made of high-performance beryllium copper. That means that they are not only nonsparking, noncorrosive and nonmagnetic, but much stronger than tools made of other safety materials.

In addition to their added safety factor, Berylco tools compare

favorably with the quality you expect in steel tools. They're hard and tough. They retain their cutting edges, and they last a long time.

Berylco Safety Tools are widely distributed through jobbers. Write for the name of the one nearest you—and for a complete, illustrated catalog.

BERYLCO THE BERYLLIUM CORPORATION
Dept. 3C • READING 14, PENNA.



Machine Guards

—From page 184

starting and stopping devices, and other moving parts of equipment used in the mechanical transmission of power. Also included are prime movers, intermediate equipment, and other machines.

Power transmission parts, particularly in modern installations, contribute a relatively small proportion of the total number of injuries. Nevertheless they can cause permanent disabling injuries and should not be neglected.

Individual motor drives and modern designs with moving parts enclosed have eliminated much guarding on the job. However, some guards must still be added when machines are installed.

Materials for Guards

Sheet metal, perforated metal, expanded metal, heavy wire mesh or bar stock may be used for most types of guards.

Transparent plastic is used where inspection of moving parts is necessary and the strength of metal is not needed.

Shatter-proof glass is used in similar situations, particularly where illumination of guarded parts is essential and the flexibility of plastic is not required.

Where flying particles may mar safety glass or plastic, the surface may be protected by replaceable glass covers.

Wooden guards are relatively low in strength but are sometimes used where splashes and fumes from corrosive substances would attack iron or steel.

Aluminum or other soft metals may be used where resistance to rust is essential, or there is possibility of damage to the machinery from iron or steel.

Feeding tools. Several types of feeding tools have been developed for use on presses with automatic feeds or enclosed guards. These tools are made of soft metal, aluminum or magnesium. They include pushers, pickers, pliers, tweezers, forks, and suction disks. These tools are not substitutes for guards and should be used only in conjunction with two-hand trips or pull-back guards.

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Electric Equipment

—From page 182

plant conditions, rigid metal conduit, effectively grounded, is most satisfactory.

Other methods which may be used under certain circumstances include armored cable, non-metallic sheathed cable, flexible metal conduit (BX), raceways, and open wiring on insulators. National and local wiring codes should be observed.

Over-Current Devices

Fuses or circuit breakers should be installed in every circuit. Protection of this kind, both for personnel and for equipment, is important. These devices open the circuit automatically in the event of excessive current flow due to accidental ground, short circuit, or overload.

Types of fuses include:

A link fuse is a strip of fusible metal between two terminals of a fuse block. If exposed, it may scatter hot metal when it blows.

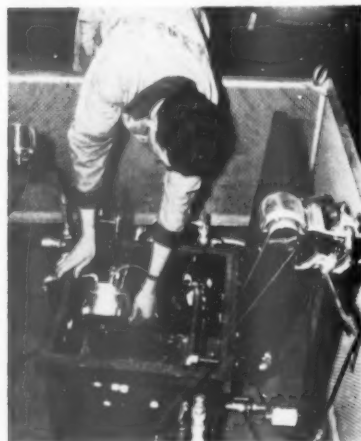
Expulsion fuses are used in central stations, power houses or on overhead lines. When they blow, the gases generated aid in quenching the arc.

Plug fuses are used on circuits which do not exceed 30 amperes at not more than 150 volts to ground. The type which cannot be bridged inside the holder is recommended.

Cartridge fuses have fusible metal strips enclosed in fiber tubes. Those which indicate when the fuse is blown and the refillable types in which fusible elements may be replaced are available.

Where practicable, fuses should be protected by a switch which will make the fuses dead when opened. Insulated fuse pullers should be kept on hand for pulling and replacing fuses.

Circuit-breakers are used in high voltages or large current capacity cir-

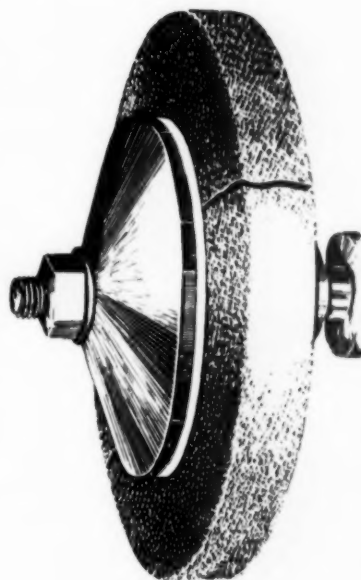


Engineer at Underwriters' Laboratories checks clearance on explosion-proof fixture.

THE STORY of the BROKEN GRINDING WHEEL!

A whirling grinding wheel can tell its own story of havoc when it explodes . . . But in this case Perks Safety Washers do the telling!

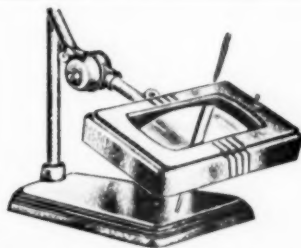
A test conducted in the Sta-Safe laboratory used the new neoprene faced Perks Safety Washers and an 8" grinding wheel cracked in two places. At 5,000 RPM—an outer surface speed of 12,500 feet per minute — Perks Safety Washers held the wheel intact!



Standard Safety does *not* recommend to you the use of broken grinding wheels—even with Perks—but Standard Safety does recommend Perks Safety Washers as a precaution against possible tragedy in your company. Perks Safety Washers are easily installed on any size grinding wheels. Keep your equipment and personnel safe-guarded. Write now for Bulletin No. 584 containing complete information about Perks Safety Washers.

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cuits, and are becoming more common in many kinds of circuits. They may be instantaneous in operation, equipped with timing devices, manually or power operated.

Switches

Available switches include snap switches, knife switches, enclosed externally operable air-break switches, and oil switches. Those designed for controlling individual motors and machine tools and for lighting and power circuits are of the enclosed type.

Open-knife switches are undesirable because of exposure of live parts and

because of the arc formed when the switch is open. It is advisable, therefore, to enclose knife switches in grounded metal cabinets having a control lever extending through a slot in the cover.

Oil switches have contacts which operate while submerged in oil. They are especially desirable in circuits of 750 volts or more and may be used also in lower voltage circuits.

Snap switches, such as pushbutton or toggle types, usually have live parts enclosed. Flush switches should be installed in metal boxes, and surface switches used in open wiring and

moulding work should be mounted on porcelain or plastic sub-bases. These switches should indicate whether the circuit is open or closed.

Snap switches are preferable to key or pull-chain sockets. If key sockets are used, porcelain, plastic, or other non-conductive types are recommended. Pull-chains should contain non-conductive links.

Protection against accidental shock from live electric parts, such as switchboards, fuse panels and control equipment is obtained by insulating the floor area within reach of live parts.


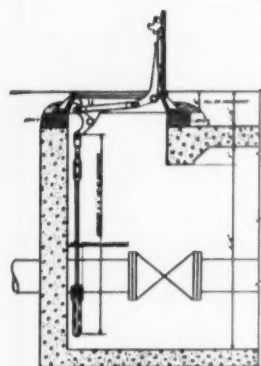
For low-voltage exposures, dry wood floors without metal parts, or insulating mats, may be used. Mats should be non-conductive, moisture resistant, and able to withstand mechanical abuse in service.

Cords, Sockets, Lamps

Extension cords should be of a type listed by Underwriters' Laboratories and labeled to show compliance with all requirements of the National Electrical Code. They should be inspected regularly. Kinking or excessive bending of cords should be avoided.

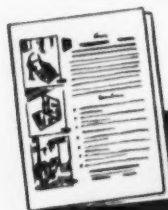
Ordinary lamp cord should not be used where it will be exposed to mechanical wear or to moisture—never for extension lamps in boilers, tanks, or on damp or metal floors.

Cord for portable tools and equipment is made in several grades. Rub-

● The Wachs Safety Counterbalanced Vault Cover can be opened with ease and safety by one man. To open, merely insert the combination Key-Handle, give it a half turn and open the cover with one hand. The counterbalance weights that make lifting the cover a one handed job also hold it in an upright, protective position while a man is below. Designed and manufactured to withstand the heaviest traffic, many of these units have given trouble free service for over 40 years under the most rugged conditions. Several leading utility companies have had them in use for this period of time.

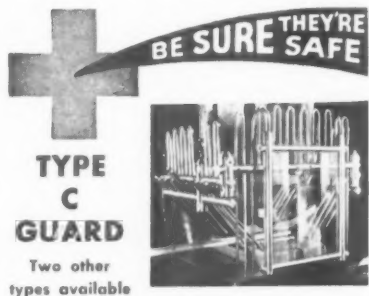
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ber-sheathed cord should be used with tools and lamps in boilers, tanks and other grounded enclosures.

For heating devices, such as electric irons and water heaters, the cord has an insulating covering containing flame-proofing material such as asbestos fiber. It resists high temperature but not dampness.

Sockets should be of porcelain, non-conducting plastic, or rubber covered. Ungrounded metal-shell sockets are not recommended.

Extension lamps are sometimes used under conditions where a shock of 110 volts might be fatal. Safe cords and lamp holders must be provided and maintained in good condition. Handles should be of non-conducting material and there should be no metallic connection between the lamp guard and the socket shell.

Miniature voltage. Portable transformers which step the lamp voltage down to 6 volts are frequently used where the shock hazard is serious.

Training. The safety program should include thorough training of all employees who install or operate electrical equipment. In addition to instruction on the hazards of electricity they should be trained in arm-lift, back-pressure method of resuscitation. Distribution employees should also know the pole-top method.

REFERENCES Electricity

National Electrical Code, C1-1951—(Natl. Board of Fire Underwriters Pamphlet No. 79.)

National Electrical Safety Code, C2-1947—American Standards Assn. (NBS Handbook No. 30.)

Electric Equipment in Industrial Plants—Safe Practices Pamphlet 29, NSC.

Grounding Portable Electric Equipment—Data Sheet D-Gen. 42, NSC.

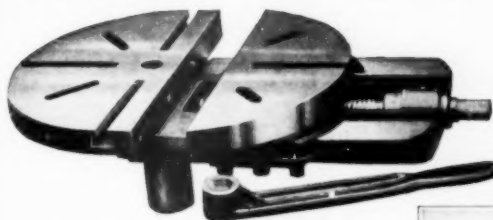
Methods of Locking Out Electric Switches—Data Sheet D-Gen. 41, NSC.

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Your Electric Equipment, by D. L. Bee-man—N. S. News, Nov. 1948, p. 24.

Electricity and the Human Body, by W. B. Kouwenhoven—N. S. News, Feb. 1951, p. 30.

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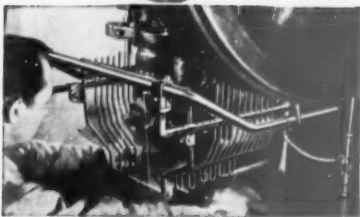
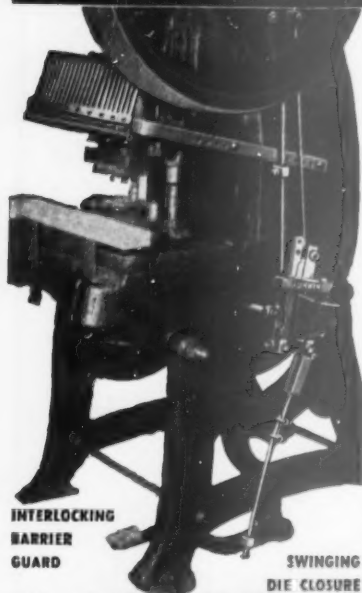
Here at last is a device that instantly, accurately spots dangerous defects in electric hand tools or extension cords... the sensational new POW-R-SAFE Tool Tester. Simple finger tip controls permit anyone to perform complete tests. Red light flashes on to indicate DANGER, green light indicates SAFE. Spots faulty tools or cords BEFORE THEY CAN CAUSE AN ACCIDENT. Don't wait. Write for complete details at once.

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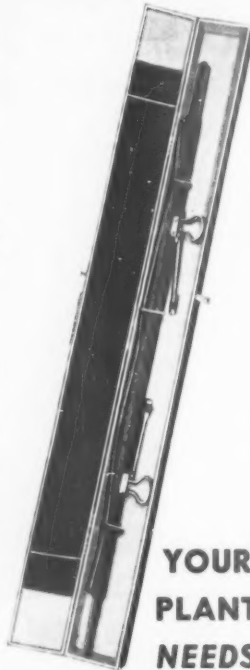
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JUNKIN STRETCHERS

STRETCHER CASE

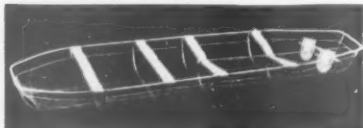
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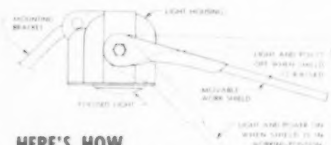
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Hand and Power Tools

—From page 183

tools should never be carried edge or point up in the pocket. They should be carried in a tool box or cart, in a carrying belt like those used by electricians and steel workers, in a pocket pool pouch or in the hand with points and cutting edges away from the body.

Display boards are often used for maintenance and repair tools and do much to encourage return of tools. In other plants, racks or bins which can be moved to the work area are used. These require periodic checking to see that tools are in good repair.

An individual workman's tools should be kept in a box or rack convenient to his work area. The box should have designated places for such things as wire brushes, chisels, saws and knives to avoid exposing sharp edges.

Inspection. Permissible wear limits for tools should be set up as a guide for inspection when they are returned to the crib. Lacking such standards, the attendant or inspector should be qualified to pass on the condition of the tool for future use.

Periodic inspections of all tool operations are needed to insure efficient control. Inspections should include housekeeping in the tool crib, tool service, number of tools in the inventory, handling procedure, and condition of tools in general.

Maintenance and repair require adequate facilities, such as work benches, vises, forge or furnace for hardening and tempering, tempering baths, repair tools, grinders, goggles and adequate lighting. Repairs should be done by thoroughly trained men.

An adequate supply of repair parts should be kept on hand.

Non-Sparking Tools

Where hand tools may strike a spark and ignite flammable dust, gas or vapor, non-ferrous tools are widely used. These tools are made of such metals as aluminum, bronze, brass and beryllium-copper.

Tools made of these alloys include hammers, chisels, punches, prybars, screw drivers, scrapers, spatulas, picks and shovels. Special tools of any type can be made to order.

Substances easily ignited include gunpowder, lint, TNT, carbon disulfide and ethyl ether.

Being softer than steel, non-ferrous tools are less likely to break off fragments from the metal being worked on by the tool.

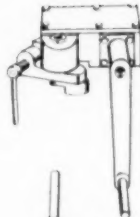
With continued use, these tools may become impregnated with particles of foreign substances which may cause sparks if not removed.

Non-ferrous alloys are more expensive than steel and these special tools are used only where there is an explosion hazard.

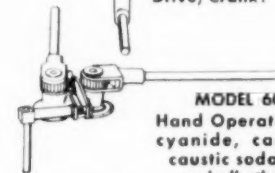
Portable Electric Tools

General classifications of hand-operated power-driven tools are:

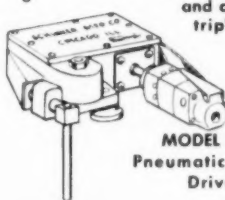
CUT OUT DRUM HEADS FASTER WITH SAFETY! Schinker Portable HEAD CUTTERS LEAVES A SAFE TURNED-IN EDGE For All Types and Sizes of Steel Drums



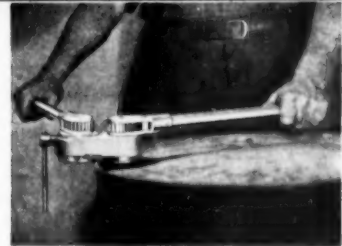
MODEL 200
Hand Operated,
Worm
Drive, Crank.



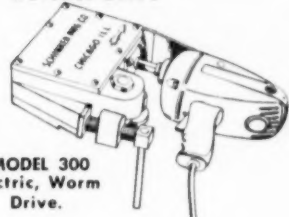
MODEL 600
Hand Operated, for
cyanide, carbide,
caustic soda, resin
and all other "one
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MODEL 400
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Drive.



MODEL 500
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MODEL 300
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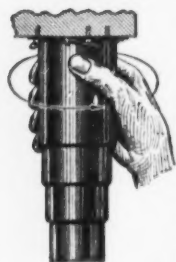
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Effectively guard against injury to operator, die and press on operations where bushings leave the guide pins. Protect pins and bushings from chips and dirt when entire pin and bushing are covered. Inexpensive, easy to attach.

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1. Abrasive tools, such as disk and portable belt sanders, polishers, and bench and flexible shaft grinders.
2. Drills.
3. Saws and other cut-off tools, routers, etc.
4. Assembly tools, such as screw drivers, nut runners and tappers.
5. Hammers.
6. Sheet metal shears.
7. Fans.

Portable electric tools are generally designated as:

Light duty, for intermittent use on light work.

Special duty or standard duty, for slightly heavy work or fairly continuous operation.

Heavy duty, for continuous operation and production service or for heavy work.

Safety switches, which operate the motor only while the switch is held in the closed position by the operator, should be used.

Three possible methods of preventing electric shock to the operator are: (1) Prevent electric contact with the shell; (2) Use non-conductive material for the shell and all parts which the operator may handle; (3) Ground the shell by means of a third wire or central grounding.

Grounding is generally considered the most practical method of safeguarding the operator against shock.

REFERENCES

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Hand Tools—Safe Practices Pamphlet 41, NSC.

Hand Knives—Data Sheet D-Gen. 30, NSC.
Powder-Actuated Hand Tools—Data Sheet D-Gen. 34, NSC.

Maintaining Electric Hand Tools, by John A. Hill—N. S. News, Feb. 1950, p. 30.

When You Use Portable Electric Tools, by B. B. Ramey—N. S. News, Apr. 1948, p. 20.

Check It to Check Your Accidents, by George MacDonald—N. S. News, Feb. 1953, p. 34.

Magnetic Separators Remove Tramp Metal

Tramp iron and steel in conveyor systems may strike sparks in the presence of combustible fibers, flammable chemicals or explosive dusts. These can be removed by properly installed magnetic separators. Their use also minimizes mechanical damage and simplifies maintenance.

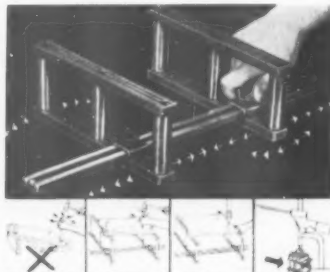
Processes which use separators include grinding, cutting or crushing of materials, working of combustible fibers, removal of ferrous particles from food products, separating ferrous from non-ferrous materials, and recovering tramp metal in mixtures.

Magnetic separators are of two general types—electro magnet and permanent magnet. Selection of the type and form to be used on any application requires expert advice.

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Supporting Dies and Jigs
Goodbye!
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OSBORN
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Defense Against Fire

SAFEGUARDING life and property against fire depends upon four fundamental principles:

1. Fire prevention engineering.
2. Early detection and extinguishment.
3. Limiting damage due to fire and fire extinguishment.
4. Prevention of personal injuries from fire or panic.

Causes. The majority of fires in industry can be traced to four general causes:

1. Open flames and high temperatures—stoves, furnaces, ovens, lamps, welding and cutting, dryers, heated pipes and surfaces, matches, smoking.
2. Friction—hot bearings, belts, cutting, grinding, drilling.
3. Electricity—defective wiring, static electricity, arcs, sparks, heat resistance.
4. Chemical reactions—spontaneous ignition, use of reagents, acids, oxidizing agents.

Incendiary fires. These may be the acts of enemy agents, individuals with grievances, and trespassers who try to cover up theft or are merely careless with fire. A general tightening up of plant protection measures and careful identification of employees are sometimes needed. In some cases, establishment of restricted areas may be desirable.

Regional offices of the Federal Bureau of Investigation are ready to work with industry in the prevention of subversive activities.

Planning Protection

The first step is a survey of the plant—its layout, manufacturing processes, materials handled, storage methods, and fire protection facilities.

With this information, plans can be made for improving structure and layout, installing additional or different equipment where necessary, and training employees in methods of prevention and extinguishment.

The municipal fire department should have a prominent place in all plans. Its members should be familiar with the plant and its problems. They can also give helpful suggestions on training and equipping plant fire brigades.

The plant should not depend on the city fire department alone. Even under the best conditions, it takes time for outside apparatus to reach the fire, and in times of emergency the department may be busy elsewhere.

In many plants, fire protection is one of the responsibilities of the safety department. Even in larger plants where there is a division of duties, the safety department has an important part in any program involving protection of life and property.

Plant organization for fire-fighting may range from a few trained employees with hand extinguishers to a full-time company fire department rivaling those of some cities.

Fire squads. The first step for any plant is to organize fire squads. A squad may consist of five or six men in each department. They should act as inspectors, reporting and correcting condi-

tions which might cause fires. They should be taught the use of extinguishers, by actual demonstration of equipment on small fires, where practicable.

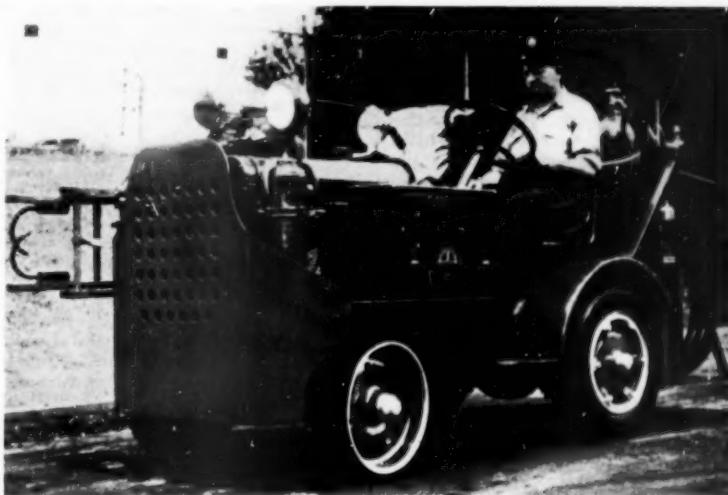
Men so trained will keep their heads in an emergency. They put out many fires before they do any serious damage, and also help to prevent panic.

Fire brigades. For the larger plant, hydrants and hose systems are basic items of protection and they need trained men to use them. Members of department squads can be members of the plant fire brigade.

These men should be familiar with all details of the plant, its protective system and water supplies. They should be drilled frequently in handling hose streams, which is no job for an amateur. Each man should have a definite task. Some should be assigned to protecting goods and machines from water damage.

Private fire departments. Some plants whose buildings and grounds cover a large area have full-time fire departments with motorized equipment. The department supervises the whole plant protection program and is trained in specialized techniques of fire fighting.

—To page 212



A fire truck that can negotiate narrow plant aisles. It carries dry chemical extinguishing apparatus, a 20-foot extension ladder, oxygen breathing apparatus, rubber boots, rope, fire axes, siren, a 50-pound carbon dioxide cylinder and a small vaporizing liquid extinguisher. It was designed by plant protection officials of Chevrolet Division, General Motors, Baltimore.

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First-Aid Extinguishers

PORTABLE extinguishers can be brought into action in the vital minutes before the company or city fire brigades can reach the blaze. Their prompt use by employees has prevented a vast amount of damage by fire and water.

Effectiveness of extinguishers depends on:

1. The right type for the risk. The wrong type may actually spread a fire, or create other hazards.
2. Correct location. If the employee must go too far to reach one, or if access is blocked, valuable minutes may be lost.
3. Regular inspection and maintenance. Apparatus is subject to deterioration and misuse.
4. Training of employees. The best extinguisher is useless if the user is untrained in emergency procedure.

Types and Uses

Common types of extinguishers are:

1. Soda-acid
2. Vaporizing liquid
3. Carbon dioxide
4. Foam
5. Dry chemical
6. Gas cartridge
7. Hand pump

Some extinguishers are available in both hand and wheel types. The wheel type is highly mobile and extra extinguishing capacity is often needed.

For Class A Fires Only:



The soda acid extinguisher is filled with a solution of bicarbonate of soda. A bottle in the top contains sulphuric acid. When the extinguisher is turned upside down, the chemicals mix, forming a gas which propels a stream of water.

Most extinguishers of this type have a capacity of 2½ gallons. They provide a stream of 30 to 40 feet lasting about one minute.



The gas cartridge extinguisher looks much like the soda-acid. It also operates the same way except that after it is inverted it must be bumped on the floor. This drives a pin into the cartridge, releasing the compressed gas which forces water through the hose. The extinguisher may contain either plain water or water with an anti-freeze chemical added.



The pump tank is made in 2½ and 5 gallon sizes. Plain water or a non-freezing solution can be used. Hard pumping will force a stream 30 to 40 feet. It is difficult to use while being carried. Somebody else can refill it while it is in use.

For Class A and Class B Fires:

These extinguishers are suitable for use on Class A fires in ordinary combustibles and Class B fires in flammable liquids. They should not be used for fires in electrical equipment.



The foam extinguisher is shaped like the soda-acid and is operated the same way. In the outer part of the extinguisher is a solution of water, bicarbonate of soda and a foam making ingredient. The inner chamber contains water and aluminum sulphate.

When the extinguisher is turned upside down the chemicals mix and force out a foaming stream. The extinguisher contains 2½ gallons of liquid and generates eight times that amount of foam.

Foam extinguishers also come in 10-, 20- and 30-gallon wheeled units.

The loaded-stream extinguisher looks and operates like the gas cartridge type. Instead of water it contains a special solution of an alkali-metal salt.

Extinguishers which may be used on Class B and C fires:

These are the only extinguishers which may be used safely on Class C fires (electrical equipment) as well as flammable liquid, or Class B, fires. They do not contain water.



The vaporizing liquid extinguisher, one-quart size, is one of the most familiar types. Carbon tetrachloride is the extinguishing agent. It is operated by pumping the handle. In contact with heat the liquid turns into a heavy vapor which blankets and smothers fire. In addition, vaporizing liquid

works effectively on Class A fires. Range is about 20 feet and stream lasts 45 seconds.

Larger units of ½- to 3-gallon capacity are operated by stored gas or air pressure.



The carbon dioxide extinguisher discharges gas through a horn-like nozzle by operating a hand wheel, squeeze grip or trigger type mechanism. These extinguishers are available in a wide range of sizes, containing from 2 to 750 pounds of carbon dioxide.

The larger units are mounted on wheels. The gas is non-corrosive and leaves no residue.

Successful operation requires a close approach to the fire.



The dry chemical extinguisher operates by squeezing a handle or turning a handwheel at the top, which punctures a cartridge of carbon dioxide in the neck of the extinguisher. This forces bicarbonate of soda out through the hose. The powder is treated to prevent caking.

FIRE PREVENTION CHECKLIST

Fire Extinguishing Apparatus

- In proper place ☐ Clearly marked ☐
Unobstructed ☐ In working order ☐

Housekeeping

- Premises free of combustible materials ☐ Safe storage of flammables ☐
Metal containers for oily rags ☐ No leaks and drippings of flammables ☐
No accumulations of rubbish ☐ Passageways clear of obstacles ☐

Electrical Equipment

- No bare wiring or badly worn insulation ☐ Motors and tools free of dirt and grease ☐
Ground connections clean and tight ☐ No lights near combustible materials ☐
Fuse and control boxes clean and closed ☐ No poor splices ☐
No makeshift wiring ☐

Heat and Flame

- No Smoking areas clearly indicated ☐ Gas jets off ☐
Ashes kept in metal containers ☐ No gas leaks ☐
Hot pipes clear of combustible materials ☐



SAFETY INSTRUCTION CARD No. 237
National Safety Council PRINTED IN U.S.A.

The 15-, 20-, 25- and 30-pound sizes have a range of 10 to 12 feet. The 140- and 300-pound extinguishers can discharge a stream 35 to 45 feet or a fan shaped stream of shorter range.

Approval. Approved extinguishers carry the label of Underwriters' Laboratories and/or Factory Mutual Laboratories. Such extinguishers bear an instruction plate giving directions for inspecting and recharging, also the type of fire (Class A, B or C) for which the equipment is recommended, and its unit rating.

Only approved extinguishers should be purchased. One essential is adequate capacity. A vaporizing liquid extinguisher must contain not less than one quart of the extinguishing agent to meet recognized standards.

Placement. An extinguisher may be useless if an employee must spend valuable minutes looking for it, or if it is blocked by piles of materials. Here are six recommended rules:

—To page 216

Types of Fires

Fires have been classified by underwriters and manufacturers in three main groups.

Class A. Fires in ordinary combustible materials, such as wood, paper, textiles, and rubbish. They require quenching or cooling effects of water or solutions containing large proportions of water.

Class B. Fires in flammable liquids, such as gasoline, solvents, oil, grease, paint, varnish and lacquers, where blanketing or smothering effect is essential.

Class C. Fires in electric equipment, such as motors, generators, and switch panels. These require a non-conductive, extinguishing agent.

Fires in motor vehicles, aircraft and motorboats have the same problems of extinguishment as Class B but equipment must be portable. Extinguishing agents must be nonfreezing.

Automatic Protection

DEVICES which automatically detect fire, sound alarms and put out fires stand guard over life and property 24 hours a day. This protection is most needed when the plant is shut down at night or on week ends and holidays but it is valuable in supplementing human watchfulness when men are at work.

Automatic plant guards are of two types:

1. Fire detection and alarm systems.
2. Sprinkler and chemical extinguishing systems.

Signal Systems

Signal systems of various types detect fires and give alarms, and supervise sprinkler systems, water supplies, and watchmen's service.

Signal systems are operated on three main plans:

1. Central station system. Signals are transmitted to an independent central station where they are recorded and proper action for the emergency taken. The central station may serve several companies.

2. Proprietary system. Similar to a central station but controlled and operated by the owner of the protected property.

3. Local system. Owned and operated by the protected company but does not have an operator constantly on duty at a central station.

Detectors and Alarms

Fire detection and alarm devices operate on the mechanical, pneumatic-electric, straight electric, and electronic principles. Some of the newer types are



Main control board of typical fire-detection alarm system. Here fire signal from any area of building is received and analyzed. Board then causes alarms to sound, area of building containing fire is registered on strategically located visual indicators, and alert is flashed to municipal fire department. Small bell and box above it comprise battery-powered auxiliary electrical supply which functions in event of power failure.

based on some form of electronics in conjunction with thermostats. These are more sensitive than the earlier types.

Electronic devices have been installed on ships where air samples from the cargo holds are drawn through a cabinet past an electric eye or gas analyzer which detects smoke instantly and sounds an alarm. Detectors similar to the marine type can be used in many industrial locations.

Where fires may start slowly and smolder for some time, photoelectric equipment often detects smoke before heat-actuated devices are affected.

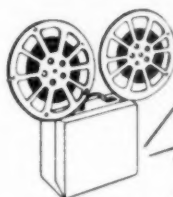
Watchmen's supervisory systems transmit and record signals made at watchmen's key stations. This system is frequently combined with fire alarm systems. A plant guard's failure to check in at any station along his route is promptly recorded at the control desk or panel.

Such supervision has checked many incipient fires, prevented many robberies and brought aid to watchmen rendered helpless by accident or sudden illness. It has also prevented much water damage by sprinklers.

Any program of fire protection should be in operation around the clock, not the main day shift alone.

—To page 206

SHOW THIS MOVIE
FREE



**SAFE
EXIT**

You can do a fine educational job in behalf of safety by showing "SAFE EXIT," a 20-minute, 16 mm, black and white sound movie, prepared for you—**absolutely free**—by the makers of Von Duprin Fire and Panic Exit Devices.

"SAFE EXIT" is a true public service film—not a product story at all—dramatically filmed and edited for the layman to understand—and benefit by. Use this film as the basis for a lively safety program in your plant.

You pay nothing—not even postage—to show "SAFE EXIT" in your community. Simply fill out and mail the handy booking request below.



Vonnegut Hardware Co., Von Duprin Div.
408 West Maryland
Indianapolis 9, Indiana

Date _____

YES, we wish to show the 16 mm, sound, B & W movie, "SAFE EXIT."

Date Desired: _____

or

PLEASE LIST ALTERNATE

Type of Audience: _____

(SCHOOL, LUNcheon CLUB, TRAINING, ETC.)

Expected Attendance _____

We understand film is absolutely rent-free, postage paid.

We agree to return film the day following our showing.

Organization _____

Authorized by _____

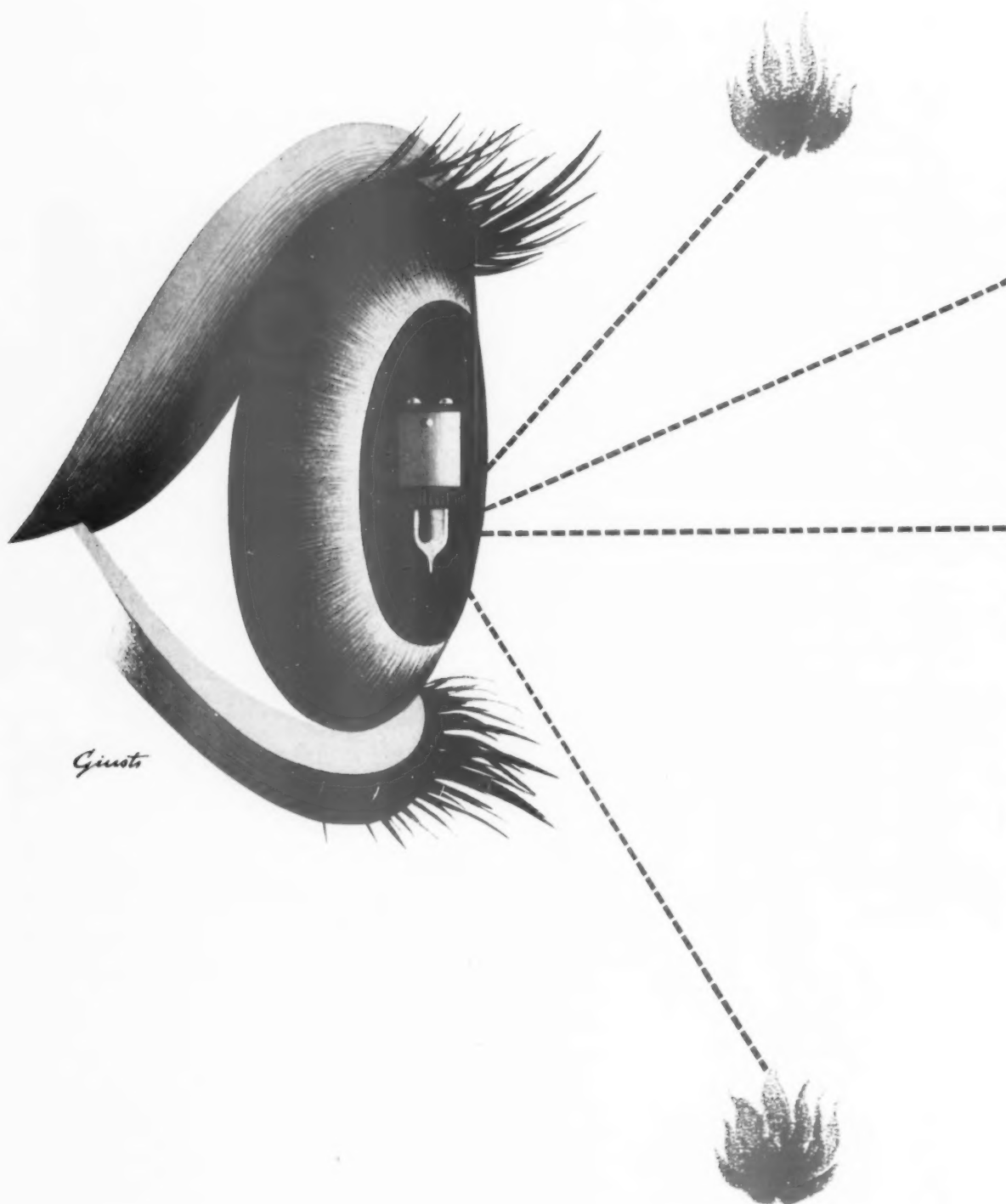
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Meet the instantaneous



fire detector...

fireye

"sees" fire with the speed of light

Here for the first time is a detector that "sees" flame instantly, and gives warning without waiting for smoke or rising heat. For Fireye, with its completely self-supervising electric-eye principle reacts with the speed of light, automatically, infallibly.

The importance of those first, few vital seconds—the period where delay can be costly and tragic—establishes the importance of Fireye, the fastest-known flame-detection system.

10,000 square feet protected with a single system of six eyes! Each eye scans a full hemisphere and protects an entire 40 x 40 foot room or area. Multiple systems provide complete coverage of any size areas.

Alarms or any extinguishing systems may be operated by Fireye detectors.

● Chosen for the Atomic Energy Plant in Savannah River, Georgia — chosen increasingly by others for important critical locations — you'll find Fireye Systems becoming the preferred fire detectors wherever equipment, materials or proc-

esses represent a high concentration of value in a hazardous area.

Are you sure of your fire protection? With Fireye you really know!

Fireye is its own policeman—automatically supervising every electronic component part—automatically and continuously reporting on the job by the constant flashing of a pulse light on the control panel—automatically discriminating against other light.

A failure in any part of the system is indicated immediately by the trouble light and an audible trouble signal... so with Fireye you know your fire detection system is on the job—not just on the premises!



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**Let Us Demonstrate
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Take only 20 minutes of your time,
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is the fastest and most remarkable
flame detection system today!

MAIL THIS COUPON TODAY.

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720 Beacon Street, Boston 15, Mass.

Please supply me, without obligation, all the facts about Fireye Protection Systems, as follows: (Check one)

LITERATURE ☐ DEMONSTRATION ☐

Name _____ (Title) _____

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Company _____

A man with a hate



● There's no halfway feeling about fire and its resulting destruction with an expert fire protection engineer...he actually hates to see a little fire roar into a raging inferno and create a sizeable loss.

This personal sense of responsibility is inherent with C-O-TWO Fire Protection Engineers...a definite plus in your behalf. Whether its fire detecting or fire extinguishing...portables or built-in systems...C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

With C-O-TWO Fire Protection Equipment, simplicity, practicability, longevity and minimum maintenance are built-in features that guarantee fast, positive action the instant fire strikes. Furthermore, extensive manufacturing and field installation skills, together with approvals such as the Underwriters' Laboratories, Inc., Factory Mutual Laboratories, Armed Forces and Government Bureaus assure you of the finest in modern fire protection equipment.

Rushed production periods and future expansions are some of the many problems carefully considered in a plant-wide firesafety recommendation by C-O-TWO Fire Protection Engineers...the prime objective always being the best type fire protection equipment for the particular fire hazard concerned.

WHEN BUSINESS STOPS... INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today...our extensive experience over the years is at your disposal without obligation. Get the facts now!



MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeeze-Grip Carbon Dioxide Type Fire Extinguishers
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AFFILIATED WITH PYRENE MANUFACTURING COMPANY

ENGINEERED FOR ANY FIRE HAZARD

SPLIT-SECOND ACTION!

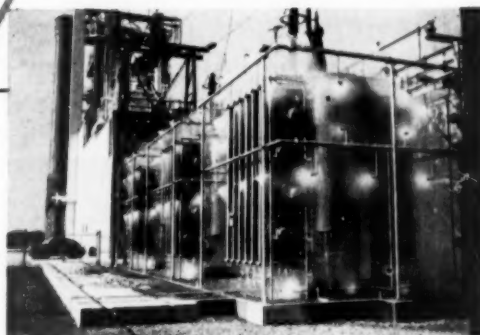
A Blaw-Knox Automatic Sprinkler or Fog System engineered for the fire hazards in and around a plant is industry's most effective weapon against ruinous fires. On the job 24 hours a day, dousing fires *at their start*, sounding alarms, closing safety doors... all with the speed of electricity. Glad to consult with you and submit an estimate without obligation.

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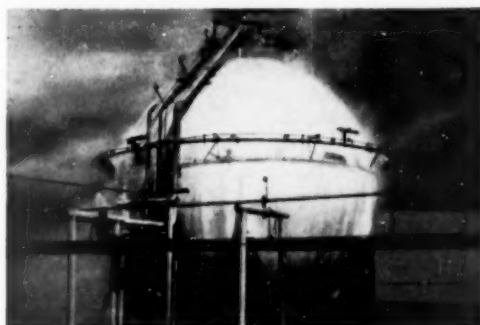
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Deluge Systems, Wet Pipe Systems, Dry Pipe Systems,
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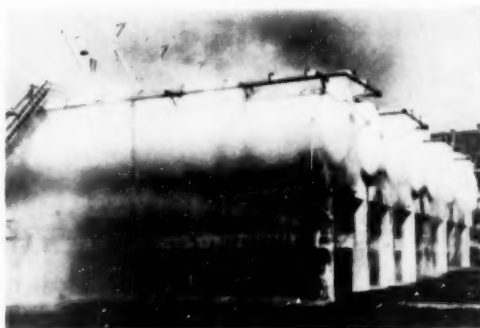
"LITTLE JOEY SPRINKLER"
Always on the Job



HOLDING TRANSFORMER FIRES TO A MINIMUM



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PROTECTING FLAMMABLE GASES

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Safe Heating of Inflammable Liquids

OVER 160,000 GLAS-COL ELECTRIC HEATING MANTLES
IN OPERATION WITH NO REPORTED FIRES IN TWELVE YEARS



Such an amazing record of safety in laboratories and pilot plants attests to the sound design of Glas-Col Electric Heating Mantles. The mantles (Series O and Series M, heating elements imbedded in glass fabric), which are designed to operate at a maximum of 450C, have been responsible for greatly reducing laboratory fire hazards. Special mantles

for operation at 650C and constructed of quartz fabrics are also available, but these high temperature units (Series S) are not recommended for protection against fire hazards.

Consult with our engineers, today. Glas-Col Apparatus Company, Inc., Dept. NSN, 711 Hulman Street, Terre Haute, Indiana.

GLAS-COL ELECTRIC HEATING MANTLES

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SPECIALISTS IN LABORATORY AND PILOT PLANT HEATING PROBLEMS

SHELL STRENGTH

**... NEVER
BEFORE
ACHIEVED!**

**TESTED
TO
500 LBS.**

Approved by
Underwriters
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IT'S A
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FEATURE OF THE
**ALFCO MODEL 5F-1
FOAMITE
FIRE EXTINGUISHER**

Alfco's finest in 2½-gallon fire extinguishers is Monotype Construction in Silicon Bronze. Shell strength never before achieved . . . newest in modern design . . . superlative smartness of appearance—these Alfco Monotype Silicon Bronze units are second to none!

Made with unremovable Alrauh label of distinguishing red color as an integral part of the shell . . . more legible, more easily cleaned.

The Alfco Model 5F-1 Foamite Fire Extinguisher embodies the best engineering skill and craftsmanlike production of Alfco's century and more of leadership in fire protection. Tested to 500 pounds . . . ultimate shell strength is 1400 pounds per square inch! Discharges approximately 25 gallons of tenacious Foamite Firefoam, ideal for blanketing and smothering ordinary free-burning or flammable liquid blazes. Underwriters' ratings: A-1 B-1. Silicon Bronze Monotypes also available in Alfco Soda-Acid. Write for free literature.

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OUR 2nd Century
of Leadership in
FIRE PROTECTION

AMERICAN-LA FRANCE FOAMITE
ELMIRA - NEW YORK - U.S.A. Corporation

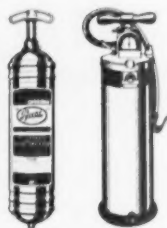




CAREFULNESS ISN'T ENOUGH YOU NEED PYRENE, TOO!

There's a Pyrene for every fire hazard

The watchword of fire prevention is *Be Careful*. But fire may come—any time. When it does, Pyrene® can make the difference between a harmless scare and a gutted business. Whatever your fire hazard, there's a Pyrene to cope with it—for Pyrene makes everything from hand extinguishers to complete automatic fire-fighting systems.



VAPORIZING LIQUID

All-purpose extinguishers. Safe on electrical fires, effective on flammable liquid fires. 1 qt., 1½ qt. pump types; 2 qt., 1 gal. pressure types.



CHEMICAL FOAM

2½ gal. size produces about 22 gals. of fast-acting foam. Ideal for flammable liquid and ordinary combustible hazards. Also 10 gal. and 40 gal. (above) wheeled units.



PUMP TANK

Shoots a continuous 45-foot stream of water or anti-freeze solution. Refillable while in operation. For fires in wood, paper, textiles. 2½ and 5 gal. sizes.



Water type (stainless steel) Seamless anti-freeze or water type

CARTRIDGE-OPERATED

Eliminates annual recharging. For fires in wood, paper, textiles. Shoots water or anti-freeze solution. 2½ gal. size.

NOW AVAILABLE IN STAINLESS STEEL!

(2½ gallon sizes)

WATER TYPE FOAM SODA-ACID

Welded shells for greater strength than ever before.

Good-looking, too!



Welded stainless steel Seamless copper

SODA-ACID

Standard protection for ordinary combustibles. Shoots a steady 40 ft. stream. 2½ gal. size. For offices, factories, stores. Also in 40 gal. wheeled units.

© T. M. Reg. U.S. Pat. Off.

**Also a complete line of
air foam playpipes and systems**

PYRENE MANUFACTURING COMPANY

583 Belmont Avenue

Newark 8, N.J.

Affiliated with C-O-Two Fire Equipment Co.

Automatic Protection

—From page 199

Watch service. Watchmen are vital to the protection of industrial property. They discover and correct fire hazards, detect the outbreak of fire, extinguish incipient fires, and call help promptly when needed.

The watchman should be a mature, able-bodied man who is loyal and dependable. During periods when the regular working force is absent the safety of the plant depends to a large extent upon him.

The watchman should be familiar with all parts of the fire protection system, including sprinkler systems, valves, drains and fire pumps. He should know how to operate extinguishers.

Recorded hourly rounds for watchmen are recommended for most plants. Approved watch clock or supervisory systems give a record of calls at each station.

Automatic Sprinklers

Sprinklers go into action automatically soon after a fire breaks out, deluging the area below. They operate in heat and smoke and control fires that could not be reached by other means. Since their introduction in 1875 they have played an important part in reducing industrial fire losses.

Over a period of years, insurance records show that more than 95 per cent of fires in sprinklered buildings were extinguished or held in check by sprinklers.

In the few cases where sprinklers have failed to function when needed, the fault has rarely been due to the sprinkler mechanism. Deficient water

—To page 210

WATCHMEN

Keep flashlight or lantern in good condition.

Use stairs, ladders and elevators carefully.

Know how to reach hospital, doctor, fire and police in a hurry.

Be able to give yourself first aid.

Avoid tripping hazards, holes and nails in floors.



Watch the plant for:

1. Bad housekeeping, particularly oily rags and flammable stuff.
2. Materials piled near sprinkler heads and fire equipment. Fire doors blocked or left open.
3. Signs of smoking in dangerous places.
4. Leaks of flammable liquids or gases.
5. Open flames, gas or electric heaters operating improperly or out of order.
6. Fire fighting equipment out of place or out of order.



SAFETY INSTRUCTION CARD No. 35
National Safety Council
PRINTED IN U.S.A.



Who says a reinforced Concrete Building can't be Destroyed by Fire...

This building, a \$3,920,000 loss,
could have been saved with
Grinnell Automatic ProtectoSpray

When the smoke cleared away . . . damage to this "fireproof" warehouse, and the 150,000 tires and tubes it contained, fell just short of the four million dollar mark! What a terrific price to pay for the lesson, already well-known to many, that "fireproof" buildings often serve merely as good stoves for flammable contents.

Grinnell ProtectoSpray could have prevented this costly fire. ProtectoSpray provides automatic fire protection for many types of special hazards, where standard sprinklers would be less effective. For instance: high piled storage; flammable liquids with flash points down to kerosene; wall or floor openings; oil-filled equipment; paint storage, or wherever a directional spray is needed.

Consider your own special fire hazard . . . then write, and we will be glad to send literature on the Grinnell Automatic ProtectoSpray. Grinnell Company, Inc., Providence, R. I. Branches in principal cities.



Grinnell ProtectoSpray attacks fire in three ways: 1) water vapor from the fine spray droplets dilutes the flammable vapors already present, to make them unburnable; 2) evaporation of the fine droplets removes heat from the solid or liquid source of flammable vapors, thus cutting down the fuel supply; 3) the evaporation of the droplets reduces the temperature of the fire gases, helping to prevent fire spread.



GRINNELL
FIRE PROTECTION SYSTEMS

Manufacturing, Engineering and Installation of Automatic Sprinklers Since 1878

Demand
JUSTRITE
Safety Approved
Products



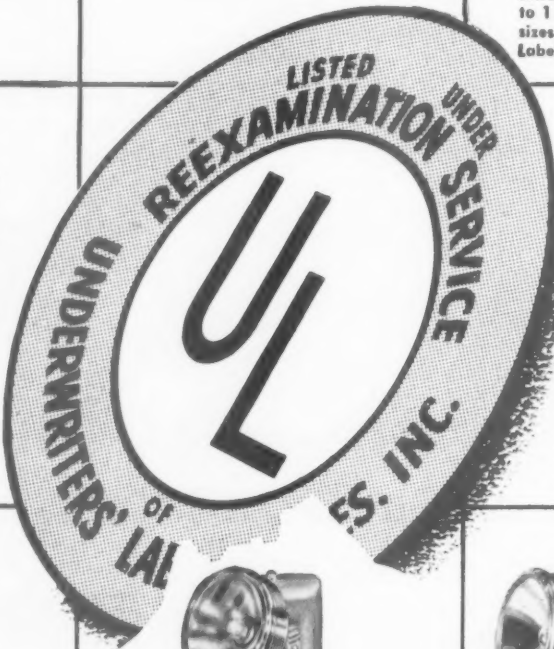
SAFETY FILLING CANS. Flexible metal pouring hose. 3 or 5 gallons.



SAFETY CANS. Seven sizes. One pint to 1 gallon with trigger handle, larger sizes with swing handle (shown). Labeled by Underwriters'.



Model 1610 EXTINGUISHER
Entirely new development in carbon tetrachloride extinguishers. Labeled by Underwriters'. Air pressure operated. Easily refilled.



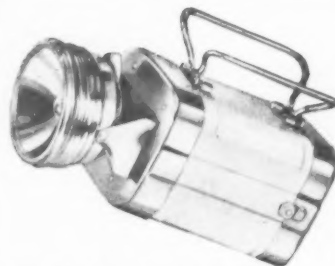
OILY WASTE CANS
Heavy gauge galvanized for safe handling of waste, rags and other flammable materials. Underwriters' labeled. Sizes, 6 to 25 gal.



NO. 1904-S HEADLIGHT. Adjustable elastic headband. Case easily slipped in pocket holds 4 standard flashlight cells.



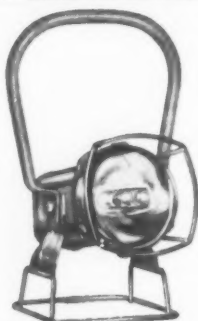
NO. 1717-S FLASHLIGHT. Compact 3-cell design. Plastic case, metal reinforced, guaranteed. No. 1727-S FLASHLIGHT with flexible extension.



NO. 2188-S FLASHLIGHT. Eight standard flashlight batteries give 12-volt power. Or 6-volt lantern battery may be used for economy.



NO. 2144-S LANTERN. All purpose. Two bulbs for either spot or spread beam. Adjustable bail and stand. Uses 6-volt battery.



NO. 2146-S FLASHING. Up to 67 hours continuous flashing service. Red Fresnel glass globe. For 6-volt battery.

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SAFETY
PRODUCTS

Available through leading industrial supply distributors everywhere.

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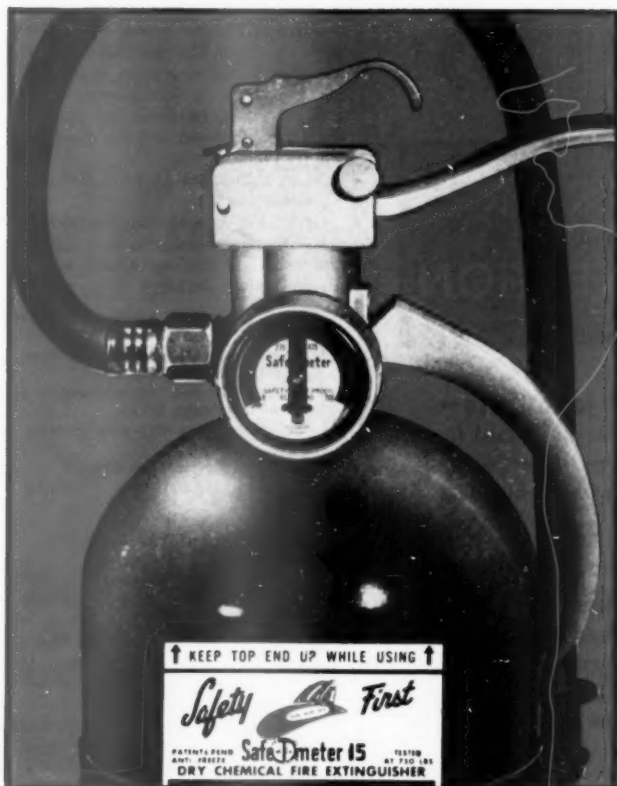
Safety First

Safe-T-meter

PRESSURIZED

DRY CHEMICAL

FIRE EXTINGUISHERS ARE MAINTENANCE-FREE!



- **PERIODIC INSPECTIONS ARE VISUAL!**
— just a glance at the gauge.
- **INSTANT INSPECTION BY EVERYONE!**
— every employee is an assistant to your safety engineers.
- **ON-THE-SPOT INSPECTION!**
— no need to move unit from location of hazard.
- **TAMPERING, IMPROPER RECHARGE REVEALED!**
— BEFORE the emergency of fire!
- **SERVICING INSTANTLY SIGNED!**
— after use of extinguisher or loss of pressure shown on gauge.
- **FAULTY MAINTENANCE ELIMINATED!**
— no technical knowledge needed to read color-coded gauge.
- **MAINTENANCE COSTS GONE!**
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- **NO HYDROSTATIC TEST EXPENSE!**
- **NO PACKING OR CAKING!**
— moisture from weather or temperature changes excluded from nitrogen-pressurized contents.
- **NO HOSE-CLEANING PROBLEM!**
- **NO DISCHARGE NOZZLE** to make "watertight" or protect from corrosion.

ALSO AVAILABLE:
SAFETY FIRST'S Conventional
Dry Chemical Line, using CO₂
Pressure Cartridge —
6 Models — 5 to 30 lbs.
Underwriters Approved



The **Safe-T-meter®** Dry Chemical Line has these advantages . . . 4, 15, 20, 25 and 30 lb. sizes. Underwriters Approved. Write for complete information.

Safety First

SALES AND SERVICE IN ALL PRINCIPAL CITIES

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ELMSFORD, NEW YORK**



It's **EASIER**
and **RIGHT**

to use

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**IN INTERIOR
FIRE PROTECTION**

EASIER to get just what you want for each job because—

ALLENCO makes a complete line, everything required for portable as well as permanent standpipe-type protection. ALLENCO catalogs clearly distinguish each choice-factor on each item, save your time and trouble.

RIGHT to give reliable protection, extra value because—

ALLENCO is *proved*—oldest, and voted *first* choice by engineers, architects, contractors, distributors. ALLENCO products are made in our own plants, using only top-grade material and workmanship; we stand behind every unit.



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A.I.A. file 29e2—get yours now

Established 1887

W. D. ALLEN MANUFACTURING CO.
CHICAGO 6 • NEW YORK 7

Automatic Protection

—From page 206

supply, freezing, defective dry pipe valves, foreign material in the system, corrosion, obstruction of sprinkler heads by stock piles, or paint on the sprinkler heads are among the causes.

The sprinkler head contains a fusible plug which melts and releases the water when a predetermined temperature is reached. Valves control distribution of water to all parts of the system.

Various types of heads are available for use under a wide range of temperature conditions.

Wet-pipe systems are used where there is no danger of pipes freezing. Water is maintained under pressure right up to the sprinkler heads and operation is immediate.

Dry-pipe systems are used where there is danger of pipes freezing. Air under pressure instead of water, is maintained in the pipes. Opening of a sprinkler head releases the air pressure, resulting in the operation of a valve admitting water to the system. There is a slight delay between the opening of the sprinkler head and the discharge of water.

After a fire, sprinkler heads should be replaced promptly.

Sprinkler supervision. Sprinkler systems include devices to give automatic alarms when the sprinklers operate. These devices detect:

1. Open or closed position of control valves.
2. Flow of water in sprinkler systems, indicating fire or leakage.
3. Water levels and temperatures in gravity and pressure tanks.
4. Air pressure in dry-pipe systems and pressure tanks.
5. Fire pump steam pressure.
6. Voltage of supply for electric fire pumps.

Special Systems

For special risks, automatic systems employing carbon dioxide, foam or water spray nozzles may be installed.

Carbon dioxide is particularly desirable where the system operates in an enclosed space and the value of the contents is high and subject to water damage. Carbon dioxide is discharged manually or by means of heat-actuated devices.

Devices are also provided for closing shutters, doors, windows and dampers and stopping blowers to confine the extinguishing gas. These systems are suitable for spaces containing electric equipment or flammable liquids.

Foam installations are suitable for tanks and operations involving flammable liquids but not for electric fire hazards. They are usually arranged to operate automatically with provision for manual operation.

Water spray systems are used to protect oil-filled electric equipment, such as transformers, oil switches and oil piping and open tanks of flammable liquids. To be effective, water spray systems require expert installation.

National Safety News, March, 1953



In A Fire Emergency...

ALL HANDS ARE "SKILLED HANDS"

WITH

ANSUL DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT

With Ansul Extinguishers near-expert results are obtained by inexperienced operators. In fact, all Ansul Extinguishers are designed to provide a maximum of extinguishing effectiveness in the hands of inexperienced personnel.

This feature, plus benefits listed below, account for the outstanding preference for Ansul Equipment by fire protection men in all phases of American industry.

- 1 Water-tight construction throughout.
- 2 Easy on-the-spot Recharging (No tools needed.)
- 3 Quick, positive puncture operation.
- 4 Special cartridge guard protects cartridge . . . rugged construction throughout.
- 5 Ansul "PLUS-FIFTY" Dry Chemical used exclusively.
- 6 Corrosion resistant construction throughout.
- 7 Greater fire-stopping power.
- 8 Field tested by thousands of satisfied customers.



Send for File No. 816. You will receive a variety of helpful printed matter. Included is our latest catalog which describes Ansul Extinguishers of all sizes — from the small Ansul Model 4 to Ansul Piped Systems and Ansul 2000 lb. Stationary Units.

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IN THE U. S. A., CANADA AND OTHER COUNTRIES



ANSUL
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FIRE EQUIPMENT DIVISION • MARINETTE, WISCONSIN

MANUFACTURERS OF DRY CHEMICAL FIRE EXTINGUISHERS, INDUSTRIAL CHEMICALS, SPECIAL CHEMICALS, REFRIGERANTS AND REFRIGERATION PRODUCTS • DISTRIBUTORS OF DU PONT "FREON" REFRIGERANTS.



KINNEAR Steel Rolling Doors answer widest range of door needs

This all-new 1953 catalog gives you full, up-to-the-minute information on how to save maximum space, cut costs, boost efficiency and get more protection at doorways, in old or new buildings. In addition to complete data on Kinnear Steel Rolling Doors—the doors with the famous, *Kinnear-originated* curtain of interlocking steel slats—it tells all about Kinnear Steel Rolling Fire Doors, sectional type Kinnear Wood and All-Steel RoL-TOP Doors, and the protective Kinnear Steel Rolling Grilles. Write for your FREE copy TODAY!

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FACTORIES:

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1742 Yosemite Ave.
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California

Defense Against Fire

—From page 197

Fire prevention engineering. Conditions responsible for starting fires and causing them to spread rapidly are avoided by fire-resistant construction, isolation of hazards, good housekeeping and power storage for combustible materials.

First step in the control of fire hazards is recognition that they exist. The services of a qualified fire prevention engineer will be helpful in planning for both prevention and protection.

Extinguishing Methods

There are many types of apparatus designed for a variety of risks, but all extinguishers are based on one of two fundamental methods of quenching fires: (1) Bringing the temperature of burning material below the kindling point; (2) Depriving burning material of oxygen which supports combustion.

Water Supplies. Water is the most widely used and effective extinguishing medium for most types of fires. Important exceptions are those with electrical equipment, flammable liquids, and in materials where water damage would be excessive.

In determining supply requirements, structural conditions and processes must be considered and the number of streams that might be required to cope with a blaze.

Pumping equipment should be able to supply enough streams at adequate pressure. Allowance should be made for pumps out of service for repairs and for continuity of pumping in event of power failure.

Hydrants should be located throughout the plant area so as to give adequate coverage of all buildings, and preferably not more than 50 feet from any building.

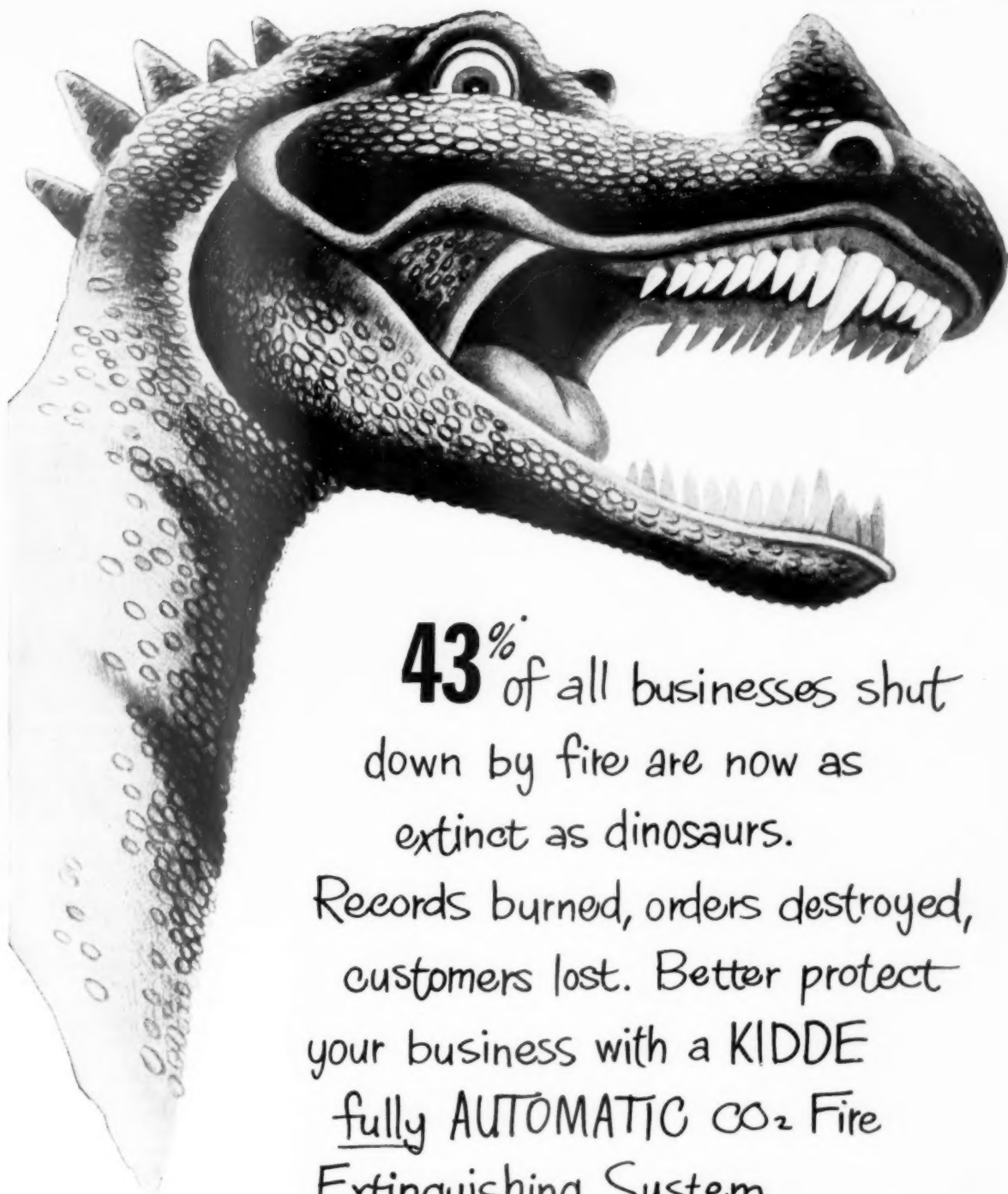
Systematic maintenance is essential. When hydrants are installed, attention should be given to drainage to minimize the danger of freezing in cold weather. Hydrants should be kept clear of snow and a thawing device provided.

Standpipe and hose provide effective protection inside buildings when used by men trained in handling heavy streams. They are a valuable auxiliary to the city fire department. Piping should be of sufficient size for buildings of more than four stories.

Couplings. All outside hydrant nipples and hose couplings should be of the American Standard 2½-inch fire hose thread.

For outside use, 2½-inch single-jacketed rubber-lined hose is ordinarily used. It is flexible and light in weight. Double jacket hose is used principally for the rougher service in municipal fire departments.

Rubber-covered hose is sometimes needed where there is exposure to fumes or corrosive liquids. Neoprene



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extinct as dinosaurs.
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customers lost. Better protect
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fully AUTOMATIC CO₂ Fire
Extinguishing System.

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*according to a survey by the Safe Manufacturers' National Association

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IT'S A RANDOLPH!

From bracket to blaze in split seconds!
No valves to turn, no
nozzles to adjust;
just point and press
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Randolph's cloud of
snowy CO₂ kills fire
completely!

Non-damaging
Randolph CO₂ evapo-
rates without a trace, is
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Learn how Randolph gives your
plant panic-proof, positive fire
protection! Write Randolph
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Kinzie St., Chicago 11,
Illinois.

has been found superior to natural
rubber for fire hose.

The 1½-inch hose is useful for small
fires and for wetting down fires after
the blaze is under control. It can be
handled easily by one or two men.

Playpipes and nozzles. Standard un-
derwriters' playpipes throw an effec-
tive stream but are difficult to handle,
particularly on ladders. The short rigid
playpipes with strap and ladder hook,
with shut-off nozzles to prevent exces-
sive water damage, are more suitable
for plant use.

Adjustable spray and straight stream
nozzles (for both 2½- and 1½-inch
hose) give water curtain protection for
firemen and blanketing effect. They
also provide solid streams for pene-
tration.

Water spray (fog) nozzles are effec-
tive for oil fires. Water fog, owing to
its low conductivity, can be used safely
on electrical fires. Its effective range
is limited to a few feet but this can
be offset to some extent by using appli-
cator pipes of varying lengths.

Foam-generating equipment is used
where large quantities of flammable
liquids are stored. For some expo-
sures permanent generating equipment
should be installed.

Foam systems may be either auto-
matic or manual in operation. There
are two types of foam, chemical and
mechanical.

Chemical foam is formed by a chemi-
cal reaction in which masses of bubbles
of carbon dioxide gas and a foaming
agent produce an expanded froth.

Mechanical foam consists of bubbles
of air produced when air and water
are agitated mechanically with a foam
solution.

Several types of foam nozzles now
available produce foam to combat dif-
ferent types of fires.

Limiting Fire Areas

Fire Doors and Shutters. For large
buildings, fire-resistive partitions with
fire doors are important in confining
fire to a limited area. Several types
of doors with varying degrees of resis-
tance have been approved by testing
laboratories.

Fire doors should either close auto-
matically each time they are opened or
be closed by a heat-actuated device if
fire should break out. The most com-
mon device is the fusible link.

The releasing device should be lo-
cated where it will be affected quickly
by heat passing through the doorway
and it should be protected against
mechanical injury.

Where flash fires may occur, quick
operating devices are preferable, except
for doors used as exits.

Fire shutters are used for windows
where there is an exposure hazard
from adjacent buildings. Shutters may
be of the swing type (tin clad or steel)
or rolling steel. The latter type can be

—To page 216

RANDOLPH SIMPLIFIED FIRE EQUIPMENT



Fire Fighter here discharges FogFOAM onto burning gasoline through 2½" FFF Nozzle.

FogFOAM puts smothering blanket over flaming liquids

Rockwood Nozzle Turns out Perfect Proportions of Foam, Air and Water to put out highly volatile flammable liquids; action is instant

Just 3 parts of Rockwood Double Strength Foam added to 97 parts of water, and you've a special "mix" that's death to fire.

It does its job through a special Rockwood FogFOAM nozzle that turns it into smothering FogFOAM. You get far greater fire fighting extinguishing action than ever possible with old style chemical or mechanical foam equipment.

Tank-truck and airplane crash fires — fires aboard ocean going tankers — fires in refineries and industrial plants — are quickly and effectively smothered.

What's more, Rockwood Double Strength FOAM is faster spreading, flows freely at sub-zero temperatures, will not corrode and can be easily washed away after fire is extinguished.

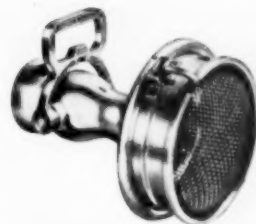
Rockwood proportioning systems automatically control ratio of FOAM liquid to water ensuring proper proportioning regardless of number of nozzles used. They can be custom engineered to your requirements.

Plan now to have a Rockwood Engineer recommend the right fire fighting equipment to meet your needs. Mail coupon below.



ROCKWOOD SPRINKLER COMPANY

Engineers Water . . . to Cut Fire Losses



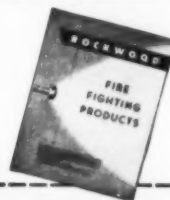
Rockwood Type FFF FogFOAM Nozzle with FogFOAM Screen available for service on 1½", 2½", 3½" fire hose lines. Nozzles discharge Solid FOAM (with shaper), and High Velocity WaterFOG as well as FogFOAM (with screen). Range of FogFOAM with shaper approximately 60 feet, with screen 30 feet.



Fleet of Tankers is equipped with FFF Nozzles and proportioning system. Shown here, FogFOAM being discharged on deck and water during test. Ships must be protected from spill fires on water as well as aboard ship.



Rockwood Double Strength Foam — available in 5 gallon cans or 50 gallon drums. Tested by Underwriters' Laboratories.



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When a flammable liquid fire strikes, you need instant, complete fire-smothering foam—not guesses! That's why National Foam System actually fire-tests every batch of foam it produces... proves its fire-fighting ability in the field, for split-second efficiency in your plant.

You know, before you buy it, that National's fire-tested foam will never let you down. National Foam System—and only National—designs, produces, fire-tests and delivers its own foam... controls every step of its manufacture. You get proved performance for your fire protection system, greater security for your plant.

For dependable, quick-acting, fire-blanketing foam, insist on National's complete line of fire-tested foam and foam devices. For free booklet, "What is Foam and How To Use It," write to Dept. F.



Gasoline ignited
in test tank



Small tower discharges
Aer-O-Foam



Fire out in less
than two minutes

NATIONAL

FOAM SYSTEM INCORPORATED

WEST CHESTER, PENNA.

Headquarters for Foam Fire Protection



installed where space is too limited for swinging shutters.

Sliding shutters are not recommended where snow and ice might interfere with their operation.

Sources of Information

Specific and accurate advice on fire problems may be obtained from fire insurance carriers, local insurance inspection bureaus, municipal fire departments, National Fire Protection Association, National Board of Fire Underwriters, Underwriters' Laboratories, Associated Factory Mutual Laboratories, and other recognized agencies.

Extinguishers

—From page 198

1. Locate extinguishers close to likely fire hazards but not so close that they will be in the fire zone should fire occur.
2. Place extinguishers so access to them will not be blocked by fire.
3. Install enough extinguishers to deal with any blaze which may be expected, the rapidity with which it might spread, intensity of heat, etc.
4. Mark locations conspicuously.
5. Identify each unit for the type of fire it is designed to combat.
6. Protect extinguishers from traffic.

Recharging. Commercial carbon tetrachloride should not be used for vaporizing liquid extinguishers. It may cause deterioration of the shell and interior mechanism. Vaporizing liquid furnished by manufacturers is treated to remove impurities and to depress the freezing point.

Before recharging soda acid and foam extinguishers, the shells and all parts should be thoroughly rinsed with warm water.

Protection from Freezing. Carbon dioxide, vaporizing liquid and dry chemical extinguishers will not freeze. Soda-acid and foam extinguishers should be installed in heated cabinets.

Gas cartridge extinguishers, pump tanks and fire pails use calcium chloride solutions.

Marking locations. Contrasting backgrounds make extinguishers conspicuous in the excitement of a fire. Methods include:

1. Painting a large red or white background on the wall.
2. A large red spot on the floor under the extinguisher.
3. Vertical red bands with yellow borders down a wall or column where equipment is placed.
4. Lights of distinctive color which do not conflict with exit lamps.

Flammable Liquids

FLAMMABLE LIQUIDS are divided into three classes by the National Fire Protection Association according to flash points closed cup test:

Class I. Below 25 F:

Ethyl ether, acetone, carbon disulfide, gasoline, benzol, collodion.

Class II. 25 to 70 F:

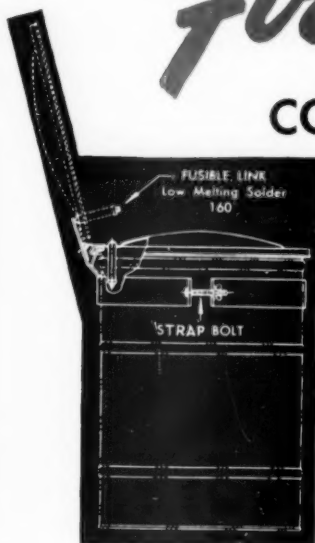
Amyl acetate, ethyl alcohol, toluol, ethyl acetate, varnish.

Class III. 70 to 200 F:

Stoddard solvents, kerosene, amyl alcohol, creosote oil, turpentine, fuel oil.

CONVERT USED DRUMS INTO

Fireproof CONTAINERS



SPECIFICATIONS

The Protectoseal Self-Closing Drum Cover is constructed of heavy gauge steel, and is available in two sizes:

Cat. No. 4830 for 30 gal. drum
Cat. No. 4955 for 55 gal. drum

A fusible link closing device is set inside the cover near the hinge. At 160° F. the solder melts, releasing the plunger spring which closes the lid instantly. Should the fusible link be destroyed by fire, Protectoseal Special Solder replacements are easily screwed in position to reset plunger.

WITH ONE SPIN OF A WING NUT,

any inexperienced employee can convert a used steel drum into a valuable piece of fire-prevention equipment. No special tools are necessary. Fit the collar of the Protectoseal Self-Closing Drum Cover over the top of an empty 30 or 55 gallon drum and tighten the bolt. This simple operation makes a large capacity fire-safe waste container for combustible materials.



Protectoseal No. 883 Laboratory Bench Can

One-gallon oval shape can made to economize space on laboratory shelf. All the fire prevention features of a regular safety can including a double cylinder, perforated fire baffle. No channel around top of can to permit solvent or dust to collect. Smooth back surface for stenciling on names of solvents. Pistol grip—easy to grasp and pour out of can.



Protectoseal No. 750 Air-Matic Parts Washer

AIR POWERED (not air agitated) washing tank operates on any compressed air supply. In case of fire the 160° fusible link melts, drops lid and snuffs out fire. Parts to be cleaned move through the solvent instead of with it and thus minimizes turbulence and vapor losses. 6½ gallon capacity designed for use with mineral spirits.



Protectoseal
Supply Can



Protectoseal
Plunger Can



Protectoseal
Oily Waste Can



Protectoseal
Bench Can



Protectoseal
Safety Can

FUSIBLE LINK CLOSES COVER AUTOMATICALLY . . . SMOTHERS FIRE

If temperature within drum reaches 160°, the fusible link in the Protectoseal Drum Cover melts, releasing spring-loaded plunger. This action closes cover instantly snuffing out fire within drum or protecting contents of drum from outside sources of ignition.

Protectoseal Fire Extinguishers

Underwriters Laboratories Approved for Class A-1 fires. No. 280 2½-gallon and No. 281 5-gallon capacities. Constructed of heavy gauge lead coated steel with electrically seam-welded seams. Interior corrosion resistant-coated with two applications of asphalt base paint. Double action pump maintains steady pressure and stream of 30 feet minimum at normal pumping speeds.



Protectoseal No. 208 Tilt Can

Safe, anti-drip 5-gallon can pivots in a cradle and permits clear view of pouring, full control of flow rate and quick shut-off. Faucet and filler opening are self-closing by spring action and are equipped with double cylinder, perforated fire baffles to prevent ignition of contents.



FREE: Analyze hidden hazards on your property with "Self-Checking Chart" and booklet of FIRE Facts, or request an inspection by Protectoseal engineers. No obligation.

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The PROTECTOSEAL COMPANY

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THE ASSURED *safe* WAY
TO HANDLE FLAMMABLE LIQUIDS

EAGLE SAFETY CANS

LISTED AND LABELED BY
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PLANT
AND
PERSONNEL
—
MINIMIZE
FIRE
HAZARD



Eagle Safety Cans are specially designed and built under rigid specifications to meet all safety regulations for handling, transporting and storing flammable liquids in every industry.

They include many exclusive Eagle features such as protecting Guard Cap that seals tighter if can is upset; Combination Free-Swing Carry and Operating Handle; Cam-Acting Connecting Arm for easy pouring and seal-tight assurance; guaranteed-against-leakage construction—one piece, no seam bodies; and, body and breast electrically welded together under electronic control . . . features which provide extra convenience, safety, efficiency, economy and long service.

Be safety wise! Order today from your nearest Eagle distributor.



MANUFACTURING COMPANY • • WELLSBURG, W.VA.

Flammable Liquids

—From page 216

Portable containers for Class I and Class II liquids should be painted red. Safety cans, painted red and with self-enclosing spouts are available in several types in 1 pint to 5 gallon capacity. The larger sizes are equipped with flame arresters to prevent flashbacks.

If several different flammable liquids are handled in one department, stripes or distinct lettering should be placed on the cans to avoid mixing liquids.

Containers for Class III liquids should be painted green with the warning label on the sides: "Flammable liquid—Keep fire away. Store outside building."

Containers should be kept clean so that the color and lettering will not be obscured.

Tank cars, storage tanks, tank trucks, connecting pipes and hose lines and filling nozzles should be interconnected with a bonding wire before an attempt is made to open connections during loading or unloading.

When flammable liquids are poured from one container to another, the lip of one container should rest on the edge of lip of the other. The two should be kept in contact during pouring and the receiving vessel should rest on a grounded surface.

Transfer pumps of approved design should be used when quantities of flammable liquids are handled. These pumps are self-priming and equipped with flame arresters and protected openings for pressure and vacuum relief.



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Unloading of collected metal is simple. Just push a wiper ring from one end of the magnetic tube to the other and the load is automatically released.

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Send for **FREE** Bulletin
which gives sizes,
prices, etc.

ERIEZ Manufacturing Co.

27 Magnet Drive, Erie, Pa.

National Safety News, March, 1953

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Standpipe and Hose Systems—Pamphlet 14.
Water Spray Systems for Fire Protection—Pamphlet 15.

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Vol. IV—Extinguishing and Alarm Equipment (1946).

Vol. V—National Electrical Code (1947).

Industrial Fire Brigades Training Manual.
Handbook of Fire Protection—Crosby-Fiske-Forster (1948).

Flameproof Fabrics

In some cities and states, textile fabrics used in places of public assembly must be flameproofed. The flameproofing process also increases resistance to weather and mildew.

Textiles may be purchased already treated or customers may send their own fabrics to the mills for flameproofing.

Flameproofing materials are available in proprietary compounds or under their chemical names. Ingredients include ammonium sulphate or phosphate, ammonium chloride, borax and boric acid. They are usually applied to the fabric in saturated solution.

Detailed information, including materials, methods of tests, standards, etc., may be obtained from the following sources:

Textile Research Institute: Fireproofing of Textiles.

National Fire Protection Assn.: Recommended Requirements for Flameproofing of Textiles.

National Safety Council: Data Sheet DT-2, Fire Retardant Treatment for Fabrics.

National Bureau of Standards: Circular C 455, Flameproofing of Textiles.

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NEW ONE HAND PRESSURIZED Redi-grip

Plus— THE RIGHT EXTINGUISHER FOR EVERY FIRE HAZARD

Hazards differ—and extinguishers differ. For absolute safety, look to the expert and the World's Most Complete Line for selection of the one right extinguisher for each danger zone. And, to kill fire in seconds, count on CBM (chlorobromomethane), the amazing new chemical that smothers fire three times faster.

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FREE—FIRE GUIDE BOOKLET

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NIGHT

EXTRA PROTECTION

NO 2424

against FIRE THEFT · SABOTAGE

In the silence of the night

the watchman makes *his* rounds while the hands on his CHICAGO Watchclock make *their* rounds.

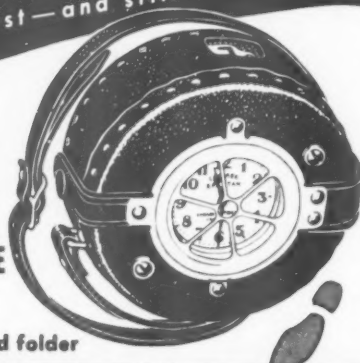
In the morning, there is a permanent dial-record of exactly where the watchman was during each hour...in the silence of the night.

The tamperproof CHICAGO Watchclock system is approved by both THE UNDERWRITERS' LABORATORIES and by THE FACTORY MUTUAL'S LABORATORIES. It gives extra protection against fire, theft and sabotage.

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OFFICES IN PRINCIPAL CITIES



SEE PAGE 211

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The Medical Service

THE PHYSICIAN and the safety director share the responsibility for protecting the worker against the risks of injury on the job and occupational diseases.

Care of the injured worker was the first responsibility assigned to industrial medicine. Its importance in that field is universally recognized but its activities have expanded enormously.

Conservation of manpower is aided by (1) Proper placement of employees through pre-employment examinations; (2) Continued supervision of employee health through periodic check-ups, particularly in health-hazardous occupation; (3) Supervision of plant processes.

Introduction of new processes and new materials with actual or potential health hazards has brought new problems and opportunities to the medical department. To study and control health hazards, some large corporations maintain industrial hygiene laboratories. Smaller companies obtain help from insurance carriers, state departments, and private consultants.

Scope of the Program

Industrial medical service requires a definitely organized plan, set up by a physician with management's full support. Essentials of such a program are:

1. A staff of qualified physicians, nurses and attendants adequate for the needs of the organization.
2. Dispensary and hospital facilities conforming to standards established by the American Medical Association, American College of Surgeons and the American Association of Industrial Physicians and Surgeons.
3. Efficient care of occupational injuries and diseases.
4. Reasonable first-aid treatment for non-occupational injuries and illnesses while on the job.
5. Physical examinations—pre-employment and periodic.
6. Adequate records of treatments and individual medical histories. The latter should be kept confidential.
7. Supervision of plant sanitation and hygiene measures.
8. Instruction of employees in personal health and safety.

IN THIS SECTION

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Hospitals. Use of approved public hospitals, where available, is usually more desirable than setting up elaborate facilities for surgery and treatment of serious cases. Hospital facilities in many communities have been over-taxed since the beginning of World War II and this led to the expansion of many plant hospitals.

The medical director. Health and medical services should be under the supervision of a physician. Management and the medical director can formulate workable policies. Medical assistants, consultants, nurses, and others, should be selected on the recommendations of the medical director.

Full-time service of a physician may be warranted by the size of the plant or the nature of its operations. Sometimes a plant physician engages in private practice with the company's approval. He may devote part of his time to the industrial organization, assuming supervisory responsibility and delegating detail work to qualified assistants.

For Smaller Plants

Part-time service. For a plant not large enough to warrant a full-time medical director, a part-time arrangement may be the solution. A physician who is present only part of the day should have definite hours at the plant.

With such an arrangement it is desirable to have a full-time nurse in



Pre-employment examinations are part of the industrial health program. Where operations involve health hazards, periodic check-ups are advisable.

attendance so that treatment will be carried out and complete records kept. The nurse is responsible to the physician and works under his direction.

Some plants employ medical service on a call basis, the doctor being summoned only in emergencies. This is the least satisfactory type of service. Under such a setup, the physician is not likely to develop a real interest in the company, nor will he be able to do effective educational work.

Cooperative services. Where several small plants are close together, a co-operative medical service program can often be carried on successfully. A central dispensary with the necessary personnel and equipment is maintained. Adequate service can be made available at moderate cost.

Physical Examinations

Pre-employment examinations have become standard procedure in many companies. Their purpose is to place each employee in a job suited to his capacity rather than to bar anyone from a job.

Periodic checkups are desirable, particularly for elderly employees, for those in jobs where safety depends on physical fitness, and where there is exposure to health-hazardous materials.

Examinations include vision, heart, chest, blood pressure, hearing and urinalysis. Tests in some industries require rather elaborate laboratory facilities.

Laboratories. For most industries, facilities for taking urine tests and blood counts are needed. Blood serum samples can be sent to a local or state laboratory for analysis. Where a large volume of toxicological tests is conducted, a complete laboratory at the plant may be desirable.

Vision. Several devices for testing visual acuity and classifying workers for jobs are available. These devices can be used by trained laymen. Employees showing visual defects are referred to ophthalmologists or optometrists for further tests.

Hearing. By means of the audiometer, acuteness of hearing can be determined and treatment indicated. Any progressive loss of hearing, through noisy work or other causes can be measured.

—To page 230

Care of the Injured

PROMPT and skilled treatment of injuries can prevent many minor cases from becoming serious and thereby avoid a great deal of lost time. Sudden illnesses that occur on the job are also within the scope of plant first-aid service and here also complications can often be avoided by prompt treatment.

Injuries should be treated by a physician or nurse if possible. Companies with extensive first-aid training programs do not permit laymen to give treatment if medical service is available. Training is strictly for emergency use.

However, most injury cases, in the plant and outside are first handled by laymen. Many a life has been saved because some trained person used the minutes while waiting for the doctor to check bleeding, apply resuscitation, and treat shock.

Military service has extended the training of laymen in first-aid techniques and combat experience has proved the value of their training. In civilian life many persons have been trained by the American Red Cross, the St. John's Ambulance Association, and the U. S. Bureau of Mines.

Competent treatment of injuries requires:

1. Trained attendants
2. Clean, convenient quarters
3. Medically approved equipment and supplies
4. Proper organization
5. Well-kept records

This discussion is concerned primarily with the needs of plants which employ a full-time nurse and part-time physician rather than those with medical staffs and hospital facilities.

Personnel. First-aid facilities should be under the supervision of at least a part-time physician. A full-time registered nurse is desirable, even in a medium-sized plant.



High-powered magnifying glass aids the nurse in removing splinters from hands and foreign bodies from the eyes.

If a full-time nurse is not practicable, at least two employees who have completed standard first-aid courses should be selected to carry on the work. They should be under the supervision of a doctor or a nurse.

Attendants should be allowed sufficient time from their jobs to keep the first-aid room in order, check supplies, and keep the necessary records. One attendant should be available during all working hours.

Dispensaries

A separate room should be provided, if possible. Patients should have reasonable privacy. If it is not practicable to partition the dispensary into a waiting room and a treatment room, a screen can be used.

Cleanliness of equipment and surroundings should be maintained for both hygienic and psychological reasons. The color scheme has an important influence on patients. For walls and ceilings, light tints in washable semi-gloss enamel are practical and cheerful. White is no longer considered necessary for hospitals and dispensaries.

The first-aid room should have:

1. Good lighting
2. Adequate ventilation and comfortable temperature
3. Basin with hot and cold running water
4. A quiet location
5. Floors of durable and easily cleaned material
6. Toilet facilities

Equipment. For a dispensary with a registered nurse in charge under the supervision of a part-time physician, equipment might include:

1. Two white enameled chairs and a bench
2. Enameled top table or desk
3. Stool
4. One or more beds or cots
5. Linen and blankets
6. Waste can with cover
7. File for medical records
8. Floor lamp
9. Treatment table and instrument cabinet
10. Medicine chest
11. Small sterilizer
12. Small items of office and surgical equipment, such as basins, pitchers, rubber gloves (sterile), scissors, tweezers, forceps, hot water bottle, ice bag
13. Stretcher
14. Telephone

Supplies

The dispensary operated under full-time medical supervision will naturally carry a wider assortment of instruments and supplies, including many items not ordinarily used by laymen, than one staffed by workers with Red Cross certificates. With the latter type of organization it is better to keep the set-up as simple as possible.

The supervising physician should be consulted about the selection of materials, particularly when medication is involved. It is advisable to leave the choice of such items as first-aid antiseptics and burn dressings to him.



Adequate first aid records on each injury are helpful in determining accident causes.

Unit first-aid material is replacing bulk first-aid supplies for smaller plants, for small groups detached from a central headquarters, men working in isolated areas where medical help is not available, and on trains, buses, trucks, airplanes and other mobile equipment.

Unit first aid material is desirable for such groups because each dressing and treatment is an individual unit, for one-time use only. Materials can be kept in sanitary condition without deterioration for long periods. There is more likely to be a sufficient quantity and wider assortment of bandages.

To simplify maintenance of industrial first-aid kits and to establish commercial standards for sizes of unit cartons and kits, the Division of Simplified Practice, National Bureau of Standards has compiled Code R178-41 in cooperation with industry.

Kit sizes and their contents are determined by the number of persons to be protected, with consideration to the nature and frequency of injuries likely to occur. Kits come in 10, 16, 24, and 36 unit sizes. A 24-unit kit for example, would be suitable for a group of 50 men.

Specifications outlined in Federal Specifications GKG-391 (Amended) are generally accepted and used by manufacturers in the production of unit first-aid material and kits.

For operations under federal regulation, assortments have been specified although these may not fit all local requirements. Contents of kits include the following items:

- Adhesive bandages
- Burn compound
- Burn solution
- Petrolatum gauze
- Ammonia inhalants
- Antiseptic swabs
- Antiseptic applicators
- Tincture green soap
- Eye packets
- Bandage compresses—2, 3 and 4 inch
- Tourniquet
- Forceps
- Scissors
- Triangular bandage
- Gauze bandage
- Gauze pads
- Gauze compress
- Adhesive tape
- Aspirin tablets
- Soda bicarbonate tablets
- Poison ivy ointment
- Insect repellent
- Snake bite packet

The unit system does away with many of the objections to the old first aid kit but a competent and conscientious employee should be responsible for dispensing the supplies. Employees may help themselves, often for home use, and supplies may not be replaced. Also, self-treatment should be discouraged.

For the smaller plant, ideal quarters for a first aid station may not be available but the best possible spot should be chosen. It should be readily accessible to the working zone and convenient for supervision and maintenance.

A lavatory with hot and cold running water and toilet facilities should be available.

Reasonable privacy is desirable, both for the patient and for the possible effect on those working in the area. If a separate room is not available, a screen can be erected.

Equipment may be selected from lists suggested for dispensaries, keeping in mind the limitations of space and the requirements of the plant. The following are essential.

1. Desk or table for filling out reports and records.
2. Chair or stool.
3. Filing cabinet for records.
4. Waste can with cover.
5. Bulletin board.
6. First aid manual.

Dispensary Records

Accurate records should be kept of all treatments. If injuries are infrequent, a small day book may be sufficient, if kept systematically. Entries should include these details:

1. Date and time of injury.
2. Date and time injury was reported for treatment.
3. Name of injured.
4. Address of injured.
5. Where and how injury was received.
6. Names, addresses and telephone numbers of witnesses.
7. Nature of injury.
8. Kind of treatment given, and by whom.
9. Whether employee returned to work after treatment; if not, when.

First-Aid Antiseptics

Infection of an open wound can be prevented by killing the germs already present or by removing them mechanically and preventing the entrance of more. It is in this second theory that soap and sterile water are used in aseptic treatment of wounds.

Careful and thorough washing with soap will mechanically remove the organisms and a sterile bandage will prevent entrance of more. Very few are destroyed in the process.

Many substances will kill germs in a test tube but a successful first-aid antiseptic must kill them in the presence of body substances and not kill too many of the body cells at the same time. Choosing the proper one is something of an art and for this reason should be left to the doctor in charge.

Corrosive sublimate, for instance, is an antiseptic mercury compound and very effective except for its bad effect on tissues. Compounds such as merthi-

—To page 230

BOMGARDNER

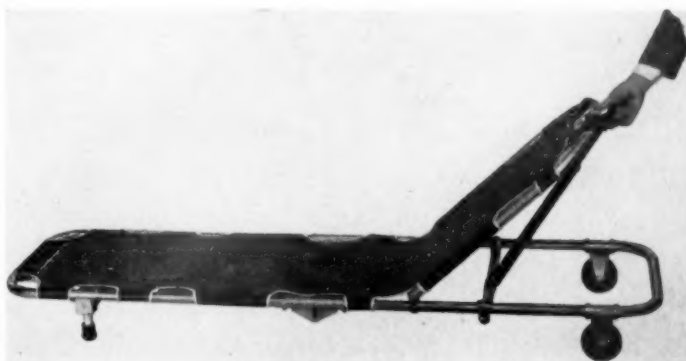
Presents

An Ultra-Modern Auxiliary Stretcher

FOLD-a-COT

with

FINGER-TIP CONTROL



This new head-rest adjuster with Finger-Tip Control is absolutely safe. There can be no accidental release. Steel and bronze construction adds nothing to the weight but insures everyday service.

- Automatic Locking Hinge
- Snap Locked Legs
- Snap Locked Four Inch Wheels

No Parts Move on the Stretcher Frame
Nothing to Work Loose, Never Becomes "Shaky"

Write for Catalogue for Full Information

THE BOMGARDNER MFG. CO.

Since 1898

1384 HIRD AVE., CLEVELAND 7, OHIO



*provides
you with*

a burn spray



◀ **New Unit Type
Burn Spray Packet**
WITH PRESSURE CARTRIDGE SPRAY
(Fits all standard unit
kits—Requires six spaces)
NO. 1030



◀ **New Complete
Burn Spray Kit**
WITH AEROSOL DISPENSERS
NO. 1010



Handy Wall Unit ▶
WITH AEROSOL DISPENSER
NO. 1035-3



kit for every need...

Quick—Thorough—Painless—Sanitary First Aid...
on-the-spot! The largest assortment of
burn spray kits ever offered

DOCTORS AGREE that certain basic principles or conditions are present in all cases of burns. The "first aider" is qualified only to deal with the first three: Relieve Pain—Prevent Infection—Treat Shock.

Spraying the burns is the quickest, most painless, sanitary, and thorough way to accomplish these three very important points involved in first aid treatment. Following this, the application of sterile dressings must be made when necessary, in order that the patient reach the doctor in the best possible condition for medical treatment. Consult your medical director concerning the type of medication he prefers for first aid treatment of burn cases.

The wide MScO assortment of Burn Spray First Aid Kits provides the utmost in flexibility of medications, method of spray application, and price. *All are designed to complement the unit system of first aid.*

COMPACT NEW UNIT-TYPE PACKET (No. 1030) lets you economically combine your burn spray first aid requirements with your standard unit-type first aid kits.

This six-unit size MScO packet provides a practical pressure cartridge spray gun (with Americaine or Kip Antiseptic Oil in pressure cartridges) and 10 refill cartridges containing the burn solution. *Packet fits any unit-type first aid kit.*

NEW, QUICK-ACTION AEROSOL DISPENSERS are among the several outstanding features of the new MScO complete Burn Spray Kit (No. 1010 and No. 1035-3).

The No. 1010 incorporates the utmost in convenience and completeness of contents. Contains 25 units of various sterile bandages and burn first aid items. New pull-out drawer contains four 11-ounce Aerosol dispensers supplied with either Americaine or Kip Antiseptic Oil.

MScO also provides a new Handy Wall Unit (No. 1035-3) with Americaine or Kip Antiseptic Oil in Aerosol Dispenser for use in boiler rooms, furnace rooms, etc. where limited first aid is required. Other types of MScO Burn Spray Kits are shown at right.

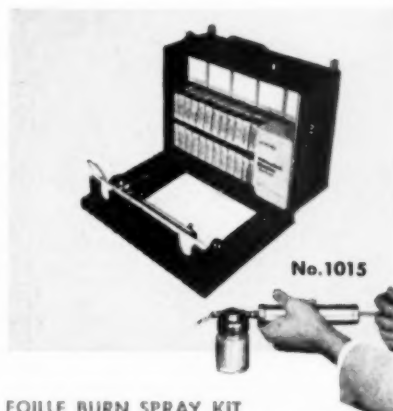
SEE YOUR COMPANY MEDICAL DIRECTOR, discuss your burn first aid problems with him. Proper first aid will save him time and save the patient needless pain. Clinical data covering burn solutions furnished in MScO Kits available on request. Also, should your medical director desire a burn first aid solution not mentioned here, MScO will provide laboratory tests for your company to determine compatibility of the solution to various metals, containers, valves and propellants. Write for facts on MScO Burn Spray First Aid Kits.



*it pays to buy
from Medical Supply*

Medical Supply Company

ROCKFORD, ILLINOIS • IN CANADA, IT'S SAFETY SUPPLY CO.



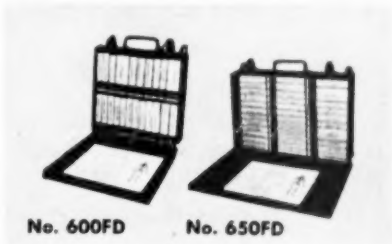
FOILLE BURN SPRAY KIT

Equipped with pump-type spray gun and five 4-ounce jars of Foille Emulsion. Also contains complete assortment of unit materials to give proper first aid for all types of burns.



**HYDROSULPHOSOL®
BURN SPRAY KITS**

Hydrosulphosol® is available in two types of unit packages, standardized into 10- and 16-unit kit assortments. Each kit contains selected assortment of sterile bandages, the 2-ounce bottle of solution with atomizer spray, and six 1/4-ounce tubes of Hydrosulphosol® Gel.



FIRE DEPARTMENT KITS

Standard equipment on fire department vehicles in many cities. Contain a complete assortment of burn and first aid materials—24-unit and 36-unit sizes. Adaptable to the needs of a wide variety of industries.

Resuscitation Methods and Equipment

PROMPT application of artificial respiration by persons trained in its techniques has saved thousands of lives in cases of suspended breathing due to asphyxiation, drowning, electric shock and other causes.

ARTIFICIAL RESPIRATION (Arm-Lift, Back-Pressure Method)

1. Lay victim on stomach, head turned to one side, cheek on one hand. Clear mouth, throat of obstruction.
2. Kneel at victim's head.
3. Place hands, thumb tips together on victim's back just below shoulder blades.
4. Rock forward slowly to exert pressure. Keep your elbows straight.
5. Release pressure by flexing your elbows. Rock back on your heels, sliding hands up victim's back and out along arms.
6. Grasp arms half way between elbows and shoulders. Pull up and towards you until you feel resistance.
7. Lower arms, repeat back pressure. Repeat cycle 10 or 12 times a minute.
8. Do not interrupt rhythm. Continue until victim is breathing strongly or is surely dead.



NOT too HEAVY—NOT too FAST. Let someone else loosen tight clothing, go for help, get blankets. You haven't time.



SAFETY INSTRUCTION CARD No. 781
National Safety Council PRINTING IN U.S.A.

The Arm-Lift, Back-Pressure Method, recently introduced, has been adopted officially by the American Red Cross and other organizations, and is being taught to an increasing number of persons. It can be applied immediately without apparatus, which is important in all cases of suspended respiration. It is more efficient than the Schafer prone pressure method which has been widely taught for many years and has saved many a life.

Mechanical resuscitators accepted by the American Medical Association are used by fire departments, hospitals and by some industries where asphyxiation or electric shock hazards are serious and where apparatus and trained personnel are immediately available.

Such apparatus can be used where injuries to the patient might prevent use of manual resuscitation. It also gives more air exchange and does not get tired.

Mechanical resuscitators are for use only by persons trained in their operation.

The inhalator, which supplies a mixture of 93 per cent oxygen and 7 per cent carbon dioxide to the patient, is used with manual resuscitation. It is particularly valuable in cases of gas asphyxiation. The inhalator, by itself, does not produce respiration and should not be confused with mechanical resuscitators.

Some types of apparatus combine the



A fire department demonstrates use of resuscitator on an asphyxiation patient. (Mine Safety Appliances Co.)

functions of resuscitator, inhalator and aspirator, restoring breathing, administering oxygen-carbon dioxide, and removing from the throat secretions which might hinder breathing.

The "Eve" or rocking method uses a stretcher over a support on which the patient is see-sawed up and down. This method is used by the British Navy and the U. S. Coast Guard. A folding stretcher and support can be carried in an automobile.

Application of manual resuscitation should never be delayed while waiting for apparatus.

'PAC-KIT' FIRST AID

MODERN UNIT TYPE
FIRST AID EQUIPMENT
FOR EVERY EMERGENCY



Provides standard products each packed in individual cartons with illustrated First Aid Instructions.

Electrically welded 20 gauge steel, dust and moistureproof cases provide complete protection of contents, give long service.

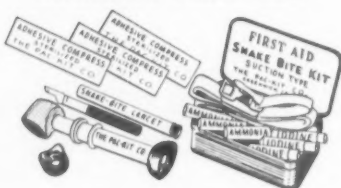
VISIT OUR EXHIBIT BOOTH NO. 103 AT GREATER NEW YORK SAFETY CONVENTION, MARCH 24-27, 1953

Write for descriptive literature and prices.

THE PAC-KIT COMPANY

P.O. BOX 1306
GREENWICH, CONN.

No. 748 SNAKE BITE SUCTION FIRST AID

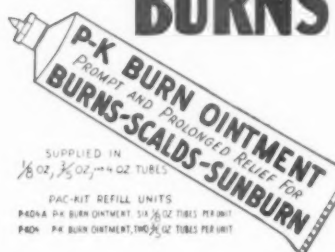


Easily operated with one hand. ANY ONE CAN GIVE EFFECTIVE FIRST AID Kit contains: Tourniquet, Lancet and Suction Syringe with

- 1 Curved Rubber Suction Cup
- 1 Large Rubber Suction Cup
- 3 Iodine Applicators
- 3 Ammonia Inhalants
- 3 Adhesive Compresses

Wt., complete in metal case, 7 ozs.

IMPROVED FIRST AID FOR BURNS



SUPPLIED IN
1/8 OZ., 1/2 OZ., 1 OZ. TUBES

PAC-KIT REFILL UNITS
PACNA P-K BURN OINTMENT, 1/8 OZ. TUBES PER UNIT
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FIRE, ELECTRICAL, WELDING,
STEAM AND FRICTION BURNS.

Scalds—Sunburn—Windburn

P-K BURN OINTMENT provides immediate and sustained relief. It is a soft Lanoline base cream with an effective analgesic. Liberal free sample on request.



ORTHOPEDIC FIRST AID EQUIPMENT FOR INDUSTRY.
We make specialized equipment for industrial first aid. First Aid unit No. 1500, shown at left is typical. Constructed largely of non-critical materials, for civilian use. Inexpensive but sturdy.

Unit No. 1500 consists of: Pneumatic Tourniquet, Litter, Thomas Arm Splint (Rubber covered), Thomas Leg Splint—Half Ring (Rubber covered), Heel Rest, Ankle Hitch, Wrist Hitch, Leg Sling, Arm Strap, Carrying Case.

ORTHOPEDIC CRUTCHES SPEED POST-OPERATIVE RECOVERY.

O.E.C. Crutches prevent armpit distress—give patient complete comfort—ease of handling. Light and sturdy. Completely adjustable. Write for information.



DEPENDABLE DRESSINGS

**for FIRST AID, for EMERGENCY
for DISASTER, for DEFENSE**

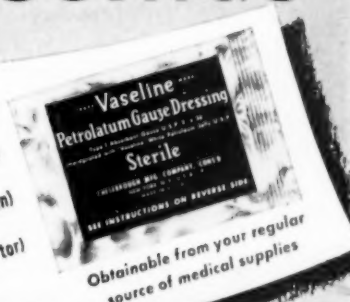
With a distinguished record of use by the medical services of the Armed Forces, by other governmental agencies, by hospitals, by emergency and disaster units, by industrial clinics and first-aid stations . . .

Now in three sizes:

No. 1: 3" x 36"
(6 in carton)

No. 2: 3" x 18"
(12 in carton)

No. 3: 6" x 36"
(6 in carton)



VASELINE STERILE PETROLATUM GAUZE DRESSINGS

...always **STERILE**, always **READY**
for immediate and easy
application to dress a burn,
an abrasion, and other
surface injuries.



have been adopted by surgeons as standard procedure, by nurses as preferred matériel, by professionally-trained aid personnel as the compact, ready-made, ready-to-apply dressing of their choice.

CHESEBROUGH MFG. CO., Cons'd
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Specify these superior dressings in
the foil-envelopes to your supplier.

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Thantis®

LOZENGES



*For Throat Irritations
which may result in lost man
hours of work.*

The original anesthetic-antiseptic throat lozenge is more effective than any imitation.

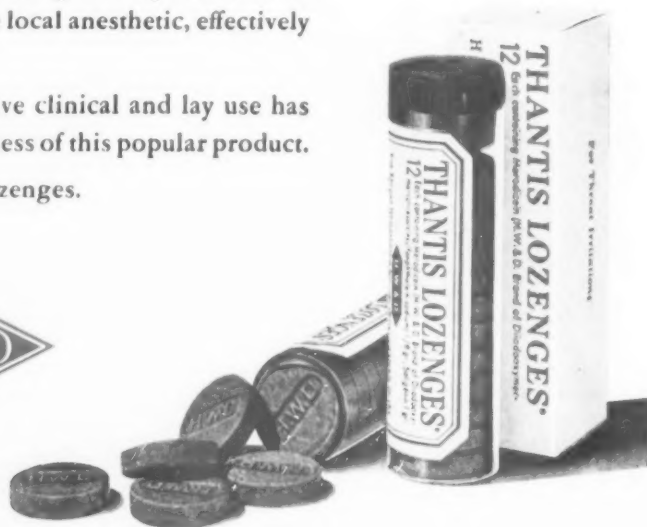
'Thantis' Lozenges contain no antibiotic; they produce no unpleasant by-reactions in the mouth.

'Merodicein'®, the long-lasting antiseptic, combats infection. Saligenin, the unique local anesthetic, effectively relieves pain and irritation.

Twenty-two years' extensive clinical and lay use has proved the safety and effectiveness of this popular product.

Supplied in vials of 12 lozenges.

® Registered in U. S. Pat. Office



HYNISON, WESTCOTT & DUNNING, INC.
Baltimore 1, Maryland

Use **STRETCHERETTE** to eliminate dangerous handling of the Injured



The Patient stays on it!

From the First Pickup

... into the ambulance, is set on the examining table, placed on hospital cart, transferred to X-ray table, and

Finally into the Hospital Bed

The medical profession emphasizes the danger of shifting an injured person. Yet, in countless accidents, the patient is handled as many as *eight* different times. Avoid this with **STRETCHERETTE**.

Light and compact, it can be kept available at a large number of places where first aid is given. From the moment the patient is first placed on it, he remains on it.

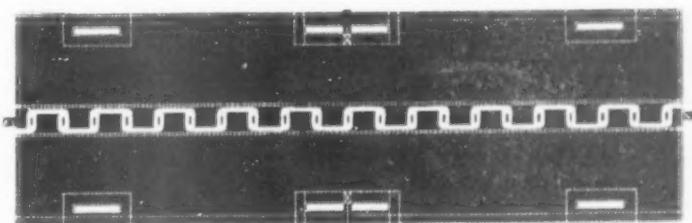
Light! Ounces instead of pounds! Total weight of Stretcherette, in its case, 36 ounces. A standard stretcher weighs 22 pounds.

Compact! Rolled into its handy matching case, the final size for storage is 5 inches in diameter, 8 inches high. Stretcherette can be hung on a nail or hook by the loop on the bottom of case.

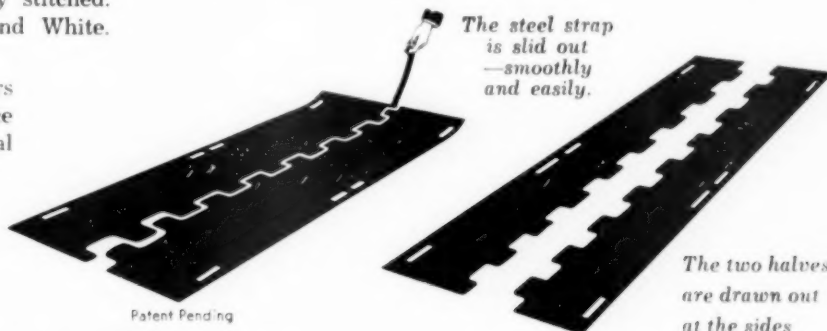
Stretcherette is made of a woven, vat dyed fabric, mildew-proof. All edges are hemmed or bound, and firmly stitched. Colors: Green; Dark Red; and White.

Available through Distributors of Safety Devices, Ambulance Supply Houses, and Surgical Supply Firms.

If you don't know who is your nearest source, write us for his name.



Here is how it works: Made in two halves, interlocking at center down which extends a flat metal strap that holds halves together.



Patent Pending

STRETCHERETTE CO. Box 1127 Birmingham 1, Ala.

What your plant can accomplish with Vision Screening

We have just made up a report of savings made by 59 plants:

Big savings in cost of training new employees (as high as 75%); reduction in accidents and spoilage; labor turnover reduced 30% or more.

Also increased earnings of employees, less absenteeism, and other gains.

Briefly summarized in a Booklet—which we'll be glad to send to any personnel official, on request.

Keystone View Co., Meadville, Penna. Pioneers in Binocular Vision Testing.

KEYSTONE

OCCUPATIONAL VISUAL SERVICE



EMERSON Resuscitators

SIMPLE to operate.

SAFE for adults, children, or infants.

ACCEPTED by the American Medical Association since 1942 for use by laymen.

PROVIDE SUCTION, alternating with pressure, to give vital aid to the circulation. Write for free Medical References on Resuscitation.

NOTE: The first few minutes after breathing has ceased are the most critical. Manual artificial respiration should be started immediately and continued until the resuscitator is in use. Write for free bulletin Emerson Method of Artificial Respiration.

J. H. EMERSON CO.
CAMBRIDGE 40, MASS.

"Simplest and Safest"



Care of the Injured

—From page 222

olate, merphenyl and mercurochrome are devised to get the antiseptic properties of mercury without its toxic effects.

The halogens (tincture of iodine and Dakin's solution) have been widely used because of their strong oxidizing action. They are even stronger than hydrogen peroxide which is used for the same reason.

The various antibiotics (sulpha compounds, penicillin, terramycin, and so on) are not antiseptics although they are very useful in treating infections. They should not be used in first aid because their use is not without danger.

Transporting the Injured

Where there is any doubt about moving the patient, medical aid should be brought to the scene of the accident, if at all possible. Lifting a patient into a car may aggravate injuries.

Before the patient is moved he should be treated for possible shock. Fractures should always be splinted.

Stretchers. The army type is easy to handle. It can be used as a cot at the scene of the accident, in transit, and at the first-aid room or hospital.

Collapsible stretchers may be folded when not in use and carried in an automobile.

Bandages, splints and stretchers may be improvised in emergencies when regular equipment is not available. Improvisation is part of first-aid training. Where men are at work, however, approved first-aid equipment and supplies should be kept on hand.

REFERENCES Care of the Injured

- Caring for Injured Workers—Health Practices Pamphlet 8, NSC.
- Training for First Aid—SPP 83, NSC.
- First Aid Textbook—American Red Cross.
- Emergency Nursing Care of the Eyes in Industry—Safety Reprint Gen. 3, NSC.
- Unit First-Aid Kits—Data Sheet 202, NSC.
- Observations of a Company Nurse—N. S. News, Feb. 1949, p. 33.
- First Aid for Airlines, by Gordon P. St. Clair—N. S. News, June, 1951, p. 28.
- New Thoughts on Resuscitation, by F. A. Van Atta—N. S. News, Dec. 1951, p. 20.

Medical Service

—From page 221

Chest. For many occupations, pre-employment and periodic examinations include X-rays of the chest. Mass chest surveys are made at regular intervals in industries where health hazards require frequent checks, and in public health campaigns to detect incipient cases of tuberculosis.

Trained technicians with mobile equipment can be engaged to conduct mass X-ray surveys.

Consultants

The medical director, like the private practitioner, is not an expert in all branches of medical sciences. Both find

planning a dispensary?

...let Aloe help you

A. S. Aloe Company has a fully staffed planning department to help you with layouts and suggested equipment lists for a dispensary of any desired size. There is, of course, no obligation on your part for our complete evaluation of your needs. Wherever your plant may be located, Aloe service and merchandise are standard; you are therefore assured of uniformity of quality and specifications. Illustrated below is a model dispensary consisting largely of Aloe exclusive equipment. Cabinets shown are the famous Moduline—Aloe exclusive steel sectional equipment, which, unlike custom-built fixed equipment, is capable of future rearrangement or expansion, or may be readily moved to new location. Moduline users include: Caterpillar Tractor, Cadillac, American Telephone & Telegraph Co. In planning a dispensary it is an important advantage that all equipment be available from one source. Please write for complete details.



a. s. aloe company AND SUBSIDIARIES • 1831 Olive St. • St. Louis 3, Mo.

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**WHY CURE?..
PREVENT!**

DON'T LOSE MAN HOURS
due to
**POISON OAK, POISON IVY,
or
POISON SUMAC**

A SUPERIOR PREVENTIVE
(When applied before exposure)

Many of the country's largest public utilities rely on B-Y's Medicated Ointment as a superior preventive. Extensive field tests by Safety Engineers have resulted in overwhelming acceptance.

A TRUSTWORTHY ALLEVIATIVE

In the event you forget to prevent, here is a trustworthy alleviative. No first aid kit is complete without B-Y's Medicated Ointment. Available in 3 size tubes, 3 oz., 1½ oz., ½ oz., and in double, and single unit packs for first aid kits.

Some of Our Users

General Services Administration, U.S. Forest Service, Region 5, California State Division of Forestry, Southern California Edison Co., Pacific Telephone and Telegraph Co., Los Angeles, Associated Telephone Co., Santa Monica, Southwestern Associated Telephone Co., California State Division of Highways, Los Angeles Department of Water and Power, California-Oregon Power and Light Co., Puget Sound Power and Light Co., City of Tacoma Light Department, San Diego Gas and Electric Co., State of Rhode Island Forest and Parks.

SUPPLIERS:
E. D. BULLARD CO.
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EMERGENCY AIDS SUPPLY
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**MEDICATED
OINTMENT
FOR
POISON OAK · POISON IVY
POISON SUMAC**

B-Y'S OF CALIFORNIA, 3010 W 7TH ST., LOS ANGELES, CALIF.



Centralized station for safety equipment in General Electric Company's chemical materials plant at Schenectady. An employee will be able to locate masks, stretcher or fire extinguisher when he needs them.

it necessary at times to call on specialists when diagnosis is uncertain or treatment requires specialized techniques.

Surgeons. In all surgical cases where there is danger of inaccurate diagnosis or inadequate treatment, outside consultation should be called in early. Frequently, the administrative and diagnostic ability of the medical director is more important than his skill in surgery. The plant physician should refer all cases which might be beyond his training and experience to a specialist or surgeon.

Oculists. Injuries to the eyes are among the most frequent of occupational injuries. The importance of the eyes is so great that highest available skill should be secured. Specialists

—To page 246

MEDICAL FACILITIES Recommended Standards

1. In plants of 500 or more, a full-time nurse should be in attendance. A physician should be present at the daily dressing hour.
2. Number of treatment rooms:
50 to 500 employees..... 1
500 to 1000 employees..... 2
1000 to 5000 employees..... 3
5000 to 10,000 employees..... 5
3. For plants of more than 1,000 employees the dispensary should be equipped with bath and toilet, equipment for minor surgery, and other apparatus and supplies selected by the physician in charge.
4. One or more beds should be provided where severe cases may be made comfortable during observation or while waiting for transportation to a general hospital.
5. An X-ray room, if facilities are not available in a local hospital or physician's office.
6. The hospital should be under full charge of the company physician.

28 Years of Successful use in treating burns!

KEEP **KIP** HANDY

Easy spreading antiseptic ointment. Packed in tubes and tins. In liquid form, too—Kip Antiseptic Oil (with benzocaine).

See your Safety Appliance
Jobber
Samples Sent On
Request



KIP, INC. 778 E. Pico St., Los Angeles 21

To Be
SAFE
Tomorrow
Get
KIP
Today!

SECTION 9

SAFETY PROMOTION and TRAINING

Training for Safety

TRAINING AIDS in great variety have been developed for the education of the industrial worker and the development of safety conscious attitudes.

Safety is so closely associated with good work that many of the media of mass communication can serve both ends.

Employee Manuals are widely used in induction procedure. They explain company policies—what the employee can expect of the company and what the company expects of him. The booklet describes medical service, personal service facilities, and other details of employment, including working and safety rules. There is a general tendency to avoid the word "rules" in referring to job practices.

These manuals range from simple mimeographed booklets to elaborate books made attractive with color and illustrated with cartoons, sketches and photographs.

Films (motion picture and slide) are used in company training programs to instruct both new and old employees in job practices and accident prevention. Types of film include:

1. Strip films presenting individual frames by projection as the voice of the instructor adds the commentary.
2. Sound slidefilms that use a similar strip with a disk or tape-recorded commentary.
3. Separate projection slides used with either live voice or records.
4. Silent and sound movies.

Slidefilms, black and white or color, can often be made from photographs taken on the job with amateur equipment. Acceptable movies require greater skill and more expensive equipment.

Films covering specific hazards and different industrial operations as well as training films covering every kind of activity are available from the National Safety Council and from many other sources.

Posters with splashes of color and pertinent safety messages will be seen by the worker as he is escorted through the plant to meet his foreman,

who will direct his initial training and supervise his work. Week after week he will see new posters, covering various hazards and relating to different safety themes. These graphic displays inform, remind, and often amuse, since the creators of posters have learned that the light touch can be most effective in dealing with even a serious subject.

Each new poster offering will get the worker's conscious attention in the beginning. After that, each time his glance falls on the design, another impression will be recorded on his subconscious mind, building his safety attitude. It is this factor of repetition that has proved the power of the poster in influencing behavior.

Safety instruction cards, covering the hazards of practically every type of industrial operation as well as seasonal and off-the-job subjects, may be handed to him by his foreman as part of the training program or as pertinent reminders of specific hazards connected with his job.

Bulletin boards in prominent locations around the plant will carry many of the above posters, charts and cards, as well as announcements, photographs of accidents or hazardous situations, displays of protective articles that have saved life or limb for fellow workers,

personal items and other trivia that will attract the interest of the employees.

Safetygraphs are special graphic training aids for use by foremen and other teachers in training groups of workers in specific phases of safety. These are collections of drawings, cartoons, charts and other illustrations, printed on heavy paper and spiral-bound in a folder that opens to form an easel. With the large illustration facing the audience, the instructor discusses the subject portrayed, using his own words or reading the suggested talk printed on the back of the page facing him.

Exhibits of various types of safety equipment, personal protective devices and the like are shown to the new worker in many plants to impress upon him the importance of safe operation and the precautions taken by the company to protect him.

Publications

Accident Prevention Manual for Industrial Operations, a cloth-bound volume of more than 800 pages, covers the essentials of a complete program of safety and occupational hygiene. It is a valuable text for those concerned with administrative and technical phases of the safety program.

Each major section of the manual is available as a separate reprint. These

—To page 236



Motion pictures and sound slidefilms add interest to both formal and informal safety meetings. Projectors and portable screens can be set up quickly.

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Safety Signs

SIGNS are among the oldest of all methods for conveying information. They are simple and effective in the safety effort, as they warn of hazards, direct, regulate and educate. Even to the illiterate their meaning can be clear and their message is conveyed at a glance.

Response to the directions of signs is practically automatic, as we have been conditioned to them throughout our lives.

Signs stand out conspicuously against their surroundings through a combination of shape, color, wording and location. Recognition of these factors has led to the adoption of standards that promote uniformity in design and color for signs that fall into various classifications. When both commercial and home-made signs conform to these standards, they will be recognized instantly as referring to certain hazards.

According to the American Standards Association code, characteristic colors for signs should be:

1. Danger—Red.
2. Caution—Yellow.
3. Safety instruction—Green.
4. Direction—Black.
5. Information—Any combination of colors, except red and yellow.

Commercial signs conforming to these standards are available with a variety of messages to cover most industrial requirements. Special signs can be made to order. Enameled metal is the most frequently used material.

Visibility of warning signs is a first requisite. Special illumination may be necessary in poorly lighted areas.

Black on white and black on yellow are the most visible combinations. Other combinations are white on black; yellow on black; dark blue on yellow; red on white; blue on white; white on blue.

Yellow is regarded as the most conspicuous color in daylight; red can be seen most readily by artificial light.

Red is universally accepted to denote danger or fire apparatus. This should always be considered in choosing color combinations for danger signs. Color's force should not be weakened by indiscriminate use.

Color combinations that contrast with surrounding colors should be used so they will stand out clearly. Use only permanent colors.

Location is an important factor, and the effect of a warning sign is wasted if it cannot be seen easily or if it is too far from or too close to the real point of danger.

Wording of signs should be brief, clear and understandable to persons with limited vocabulary.

Whenever the nature of the hazard may not be evident, the sign should if possible specify the danger, such as "Gasoline Storage."

The shorter the wording the better, but many people resent a brusque

order, however impersonal it may be. The best sign will, if it expresses more than a mere stereotyped phrase, like *stop* or *slow*, invite cooperation rather than demand conformity.

Lettering should be as large as possible, consistent with balance and legibility. Block letters are recommended for ease in reading.

The weight of line in the body of each letter should be about the same as the space between the lines.

Tables of distances at which well proportioned letters can be read by persons of normal vision under good lighting conditions are given in the American Standards Code. This code also offers detailed specifications on sign construction of the standard types.

Danger signs should be restricted to such immediate and serious hazards as high-voltage equipment, toxic and corrosive chemicals, collision hazards, explosives, etc. Employees should be warned of their importance.

Caution signs warn employees against potential hazards, such as improper use of elevators, cluttered aisles, and sparks from grinding wheels; or against unsafe practices such as oiling machinery in motion, smoking in forbidden areas, and operating machines with detached guards.

Workers should be trained to respond to a caution sign as an indication of potential danger requiring care and alertness. The difference between the danger sign and the caution sign is one of degree.

Other general types include safety instruction signs, which designate certain actions or practices, directional signs, and information signs.

Maintenance. Periodic inspection and inventory of signs should be part of the safety program. Signs should receive the same cleaning and maintenance that is given to other equip-



Examples of standardized enameled metal signs. Stock signs cover a wide variety of warning and instructional messages. (Stonehouse Signs)

ment. Dirty and disfigured signs are not convincing.

Signs which are no longer needed should be removed. Where hazards have changed, signs more appropriate to present conditions should be substituted.

Warning tags come in a variety of stock subjects. They are attached to equipment in emergencies to warn others that men are working on machines, that a valve on a pipe line has been shut because of a leak, etc. They are also used on unsafe equipment which is to be removed from service.

Decals are miniature signs which can be attached permanently to machines, walls or other places where a message of warning, caution or brief instruction is needed. They conform to the standard specifications of design and color.

Signboards with changeable letters are available in small sizes suitable for departmental use and larger types which may be erected in conspicuous places near the plant entrance where they can be seen by both employees and the public.

These boards may be used for brief safety messages and for recording the plant's record of no-accident days.



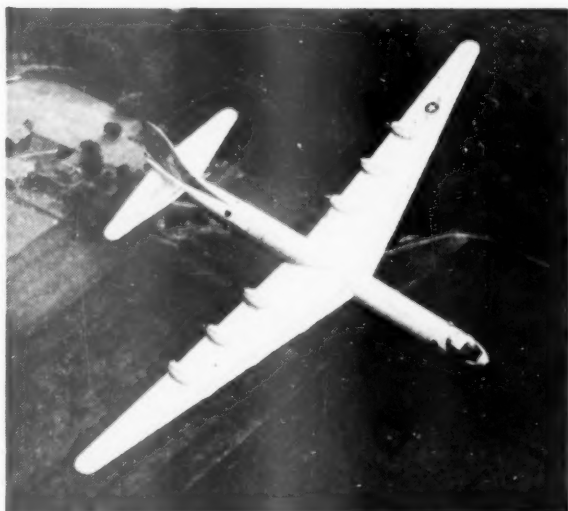
Changeable display sign used for safety messages at Mid-Continent Petroleum Corp. Sign is 10 feet long, 62 inches high. Black plastic letters are 8 inches high. (Wagner Sign Service)



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For Safety...Security...Defense The Bell Telephone Laboratories, the Bell System's research organization, and the Western Electric Company, its manufacturing unit, have been called upon to handle more than a hundred projects for the U. S. Department of Defense. (Four are shown above.) The projects cover research, development, engineering and manufacture, including the very important Sandia, New Mexico, project for the Atomic Energy Commission. Today, as always, the unique skills, experience and teamwork of Bell System people are at the service of the Nation.

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Training Aids

—From page 233

26 section reprints are intended for wider distribution of specialized material. They replace many of the older Safe Practices Pamphlets which have been discontinued.

Titles of Section Reprints are:

1. Permanent Structure and Plant Layout
2. Maintenance and Maintenance Crews
3. Boilers
4. Pressure Vessels
5. Refrigerating Equipment
6. Principles of Guarding and Transmission Guards
7. Power Presses
8. Metalworking Machinery and Abrasive wheels
9. Woodworking Machinery
10. Guarding Special Equipment
11. Storage and Manual Handling of Material
12. Power Handling of Material
13. Hand and Portable Power Tools
14. Welding and Cutting
15. Electrical Hazards
16. Flammable Liquids
17. Fire Prevention
18. Fire Extinguishment and Control
19. Personal Protective Equipment
20. Motor Transportation
21. Industrial Health Engineering
22. Industrial Poisons
23. Medical Services and Table of Chemical Hazards
24. Safety Organization and Training
25. Accident Records
26. The Safety Man's Resources

NATIONAL SAFETY NEWS brings each month 100 or more pages of practical material on industrial accident prevention, occupational hygiene, fire protection, as well as news about people, products and events in the field.

Sectional News Letters deal more specifically with the problems and news related to the industries they serve.

Accident Facts presents the annual roundup of accident experience throughout the country, giving summaries, analyses, rates, charts and tables.

Safe Practices Pamphlets and Health Practices Pamphlets offer important additions to each safetyman's library. Covering more than 140 subjects, these



A jumbo poster in a commanding location at the Willys Overland plant, Toledo.

National Safety News, March, 1953

STONEHOUSE SIGNS For ACCIDENT PREVENTION



STANDARD CRANE AND DERRICK SIGNALS

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On the great ships that sail the seven seas...on docks, around harbors...the activities of world commerce create many hazardous conditions for workers.

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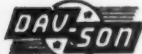
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pamphlets are detailed studies of operations important to safety supervisors, and they reflect the collective experience of hundreds of member companies.

Data Sheets offer concise, authoritative discussions on specific safety subjects. They, like the pamphlets, are furnished separately or as full sets in ring binders.

Detail Sheets offer working drawings for construction of temporary structures or safety devices that any workman can follow.

Special releases include **Accident Facts Memos, Engineering Studies and Safety Reprints** covering a wide range of subjects.

Safety score charts, home-made or available in poster services, will remind him of the accident record—or bolster his pride in the plant no-accident record.

Illustrated Safety Talks, similar in format to the Safetygraphs but smaller in size, now are being produced for similar use.

Photocscripts are give-away booklets for the workers—to teach safety with pictures. Actual on-the-scene photos make these training aids realistic and convincing.

The Safe Worker is a monthly publication for employees that has proved popular wherever circulated. Humorously written and illustrated, it covers seasonal and general safety themes. Workers in the transportation fields get similar publications called **The Safe Driver** and **The Safe Railroad**.

Numerous miscellaneous booklets published by the National Safety Council cover health and off-the-job subjects



Warning tags should be placed on switches while machinery is being serviced and on valves while piping is being repaired. Tags, however, are not a substitute for a padlock.

HOW TO PLACE YOUR SAFETY MESSAGE WHERE IT WILL DO THE MOST GOOD!

in your
employee's hands



...in his pockets



...in his home



THERE are three sound reasons why the book match is such an outstanding medium for getting your safety message noticed, read and remembered!

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Surveys show that the percentage of smokers among industrial workers averages about 90%. You can safely assume that at least the same percentage of your employees smoke, and that a book match is virtually a daily necessity to them—something always welcomed and never thrown away until completely used.

BOOK MATCH MESSAGES ARE READ AND REMEMBERED

The book match gets closer to and stays longer with its user than any other type of medium that could

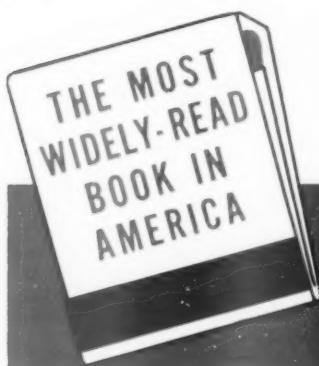
be used for your safety message. The user is exposed to the message every time he lights a match—and surveys have shown that the message on a book match is read by almost 100%, remembered by better than 35%. No other medium can equal those figures!

THE BOOK MATCH IS ON THE JOB CONSTANTLY

It is used at work and at play, at home and away. Whether an accident happens in the plant, on the highway or in the home, it adds up to the same thing: lost production. With book matches, your messages are constantly on the job—your safety campaign does not begin and end at the plant gates. In addition, a book match safety campaign is good industrial relations. The whole family will know that you are conscious of the employee's safety and welfare when book matches are used to carry your safety message!

DISTRIBUTION IS A SIMPLE MATTER

You can distribute the books at the gate at quitting time. Or you can put them in cigarette vending machines, pass them out in the cafeteria or lunchroom, give them to local restaurants, bars, filling stations, etc., or distribute them at union meetings and company social gatherings. The cost, based on a distribution of one book match per employee per working day amounts to as little as \$1.50 to \$2.50 per employee per year!



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and are designed specifically for the worker.

The Industrial Supervisor each month provides help for the foreman in meeting his safety and training problems, offering articles and features on technical and human relations subjects, safety talks, how-to-do-it features and the like.

Other publications for foremen include a series of 12 pamphlets on "Safety in Foremanship," six pamphlets on "Psychology of Safety in Supervision," and volumes of suggested five-minute talks for the foreman to use "as is" or as the pattern for his own version of each subject.

Awards and Incentives

Group and individual awards for safety accomplishments have been widely used. For plants and departments, plaques, trophies and banners are often presented. For individuals, automatic pencils, wallets, key rings and lapel buttons are among the popular items.

These awards are available in a variety of stock designs. Distinctive ones can be made to order.

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Suggestions for Use of Audio-Visual Aids

AUDIO-VISUAL AIDS can be used effectively to motivate and supplement instruction. They should be chosen to fit in with the method of instruction to be used, the group to be instructed, and the objectives to be achieved.

Audio-visual aids should serve to:

1. Formulate correct ideas.
2. Create interest.
3. Intensify impressions.
4. Broaden experience.
5. Save learning time.

No matter how good an aid may be, its effectiveness will be determined largely by the way it is used. Audio-visual aids have the advantage of being easily understood by poor readers as well as good.

It should be remembered that audio-visual aids are not a complete program

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THE SAFETY LIBRARY



Books, Pamphlets and Periodicals of Interest to Safety Men

BOOKS AND PAMPHLETS

Clothing

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About EASTERN "A" STANDS and SAFETY SIGNS



Widely Used Eastern "A" Stand

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The Safety Library

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Medical Service

—From page 232

should be summoned in all potentially serious cases.

The oculist can also serve industry in correcting defective vision among employees. The employee should, of course, have the privilege of choosing his own oculist or optometrist but frequently he will ask the advice of the medical department on the selection of a specialist. Where prescription goggles are indicated, some companies provide the examination.

Dentists. Injuries to the teeth are relatively infrequent in industry and such cases are usually sent outside for treatment. The medical department should have a list of dentists qualified to treat such injuries.

The importance of oral hygiene has led many companies to provide dental examinations, sometimes including full-mouth X-rays. The findings are usually referred to the employee's dentist since few companies provide restorative dentistry.

Health Agencies

Among the agencies furnishing helpful data on general and specialized phases of medical service, first aid and industrial hygiene are the following:

United States Public Health Service
United States Department of Labor
American Standards Association
Industrial Hygiene Foundation
Atomic Energy Commission
State and Municipal Health Departments

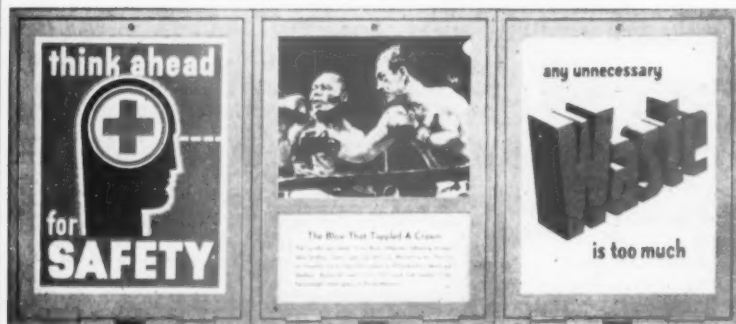
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SERVICE GUIDE

2.1

February 15, 1953

**NATIONAL
SAFETY
COUNCIL**

**OCCUPATIONAL
SAFETY
SERVICES**



Safety in ACTION

The National Safety Council is a non-profit association devoted to the prevention of accidents.

The Council, through its component conferences, sections and committees and its full time staff, undertakes to:

- ▶ "Discover the facts of accident occurrence, cause and prevention, by collecting and studying accident records, and through research.
- ▶ "Devise or help devise engineering, educational and enforcement measures for accident prevention.
- ▶ "Assist in determination of engineering requirements for the safe design, construction and use of machines and equipment.
- ▶ "Participate in planning and executing training and educational programs; produce needed education and promotional materials.
- ▶ "Disseminate all this information widely to interested groups and to the general public, to arouse them to the need and acquaint them with the methods of accident prevention."*

*From SAFETY IN ACTION, the official statement of policy prepared by the Board of Directors of the National Safety Council.

The National Safety Council officers and committee members who are guiding the industrial publications program during 1952-53 are:

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If a publication has had a major revision since first issued, the date of such revision is shown following the title.

ACCIDENT RECORDS	Section 26★	BOX MANUFACTURING, PAPER	PP-2◀	COMPRESSED GASES	95◆
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ACCIDENT RECORDS AND ANALYSIS	21◆	Bridge Painting	D-RR. 2◆	CONSTRUCTION AND DEMOLITION	
Acetic Acid	D-Chem. 29◆	Bromine	D-Chem. 21◆	(from 1st edition)★	
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		Looms, Cotton	D-T. 6 ●		
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SUBJECT LIST OF MAJOR

Technical & Administrative

PUBLICATIONS

CODE:

★ SAFETY MANUAL REPRINTS

◆ SAFE PRACTICES PAMPHLETS

◀ SPECIAL INDUSTRIES PAMPHLETS

(not included in Safetyman's Library)

● DATA SHEETS

■ DETAIL SHEETS

If a publication has had a major revision since first issued, the date of such revision is shown following the title.

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 PHYSICAL MEDICINE IN INDUSTRY HPP. 16 ●
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 Picric Acid D-Chem. 28 ●
 PILE DRIVING CON-4 ●
 PIPE LINES AND TANKS, CHEMICAL Chem. 1 ●
 Piping in Pulp Mills, see Pressure Vessels
 Pit Guard 75 ■
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 Planers, Wood, Power Feed D-W. 8 ●
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 POLES, HANDLING OF PU-4 ●
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When ordering, please give full number and title of the
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plosives. 6 pages.

Mining 2—Fatal Haulage Accidents. 4 pages.

Mining 3—Fatal Accidents from Runs of Ore or Fill. 4 pages.

Mining 4—Reflectorized Signs for Mines. 2 pages.

Mining 5—An Analysis of 100 Fatal Shaft and Hoisting Accidents.
8 pages.

Mining 6—Mine Hoisting Rope. 8 pages.

SAFETY REPRINTS

General 1—We Fix Responsibilities. 4 pages.

General 2—How Industry Protects the Worker's Eyes. 8 pages.

General 3—Emergency Nursing Care of the Eyes in Industry.
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General 4—Scientific Facts Concerning Electrical Hazards. 4 pages.

General 5—Health Aspects of Welding. 4 pages.

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General 10—Try Color. 4 pages.

General 16—How to Inspect for Accident Prevention Physical Con-
ditions—Buildings. 4 pages.

General 17—Static Electricity. 8 pages.

General 18—The Industrial Nurse—Member of the Safety Team. 4
pages.

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General 27—Fork Truck Stability. 4 pages.

General 28—The Foreman's Big Job. 4 pages.

General 29—Progressive Hazard Hunt. 2 pages.

General 30—This Safety Program Cut Lost-Time Accidents 84%.
2 pages.

General 31—Tinted Optical Media. 2 pages.

General 32—Keep Radios Away from Blasting Caps. 2 pages.

General 33—How to Prepare A Safety Manual. 8 pages.

General 34—Small Businesses and Associations. 2 pages.

General 35—Association Against Accidents. 2 pages.

General 36—Your Reaction, Please! 2 pages.

General 37—Death to Pests. 4 pages.

Coal Mining

SRCM 1—What Should a Mine Safety Inspector Look For? 6 pages.

SRCM 5—The Necessity of Active Participation of Management in
Safety Work. 2 pages.SRCM 6—Methods of Stimulating Interest in Safety Work—Safety
Incentives. 2 pages.

SRCM 8—A New Plan for Rating Section Foremen. 4 pages.

SRC—Safety Built Into High Tower Hoists. 4 pages.

Food 1—Fumigating Facts. 2 pages.

Food 2—Report of Soges Committee on Dust Explosion Hazards.
2 pages.Mining 2—Grounding Electrical Equipment at Open Pit Iron Mines.
4 pages.Mining 3—Methods of Cementing Diamond Drill Holes and Con-
struction of Underground Air Receivers. 8 pages.

Mining 5—Carbon Monoxide from Blasting Underground. 16 pages.

Mining 6—Electric Blasting in Sinking Shafts. 4 pages.

Mining 7—Earthing System for Headgears. 2 pages.

Rubber 1—Medical Problems Encountered in the Manufacture of
American-Made Rubber. 8 pages.Rubber 2—A Study of Workers Exposed to Talc and Other Dusting
Compounds in the Rubber Industry. 4 pages.

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Safety men find the TRANSACTIONS Set a rich source of ideas from other industries which can be adapted to their own programs; as reference material for speeches, articles and bulletins.

SAVE 45%

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The list of volumes is at the right.



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(Will replace Industrial Safety Guide. Available about April 15, 1953)

Where safety is a part-time job—as with your foremen and other key personnel—this new handbook is just the condensed safety guide you need. It's brief, yet covers the essentials of a sound safety program: inspections, records, material handling and storage, fire prevention and control, training, personal protective equipment, and other important subjects. Use the HANDBOOK OF ACCIDENT PREVENTION to broaden the understanding of safety through your organization; back up your part-time safety people with a reliable source of information.

ACCIDENT RATES PAMPHLETS

These pamphlets review the accident experience of about 200 industries and about 30 general groups. The pamphlet for your industry will enable you to compare your company's accident frequency and severity rates with those of other companies doing similar work. Size 5 1/2" x 8 1/2".

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Automobile
Chemical
Construction
Food (Food, Meat Packing, Tobacco)
Foundry
Iron and Steel Products (Sheet Metal, Misc. Iron and Steel Products)
Leather
Lumber and Woodworking
Machinery and Electrical Equipment
Mining and Quarry
Miscellaneous (Office, Miscellaneous Manufacturing, etc.)
Motor Transportation Fleets
Non-Ferrous Metals and their Products
Pulp and Paper (Pulp and Paper, Printing and Publishing)
Petroleum
Public Utility (Electric, Gas, Communications, Misc. Utilities)
Rubber
Service (Laundry, Hotel, Mercantile, etc.)
Steel
Stone, Clay and Glass Products
Textile
Transportation (Transit, Air Transport, Marine, and Warehousing and Storage)
Transportation Equipment (Shipbuilding, Air Craft, and Railroad Equipment)

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For use by small plants, hotels and other service industries to record frequency rates and general accident history of the organization. Size 8 1/2" x 11". 2 sides; in pads of 50.

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A check list of safe and unsafe conditions. Reverse side blank for making detailed comments or recommendations. Size 8 1/2" x 11". In pads of 50.

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For use in recording, reporting, and analyzing various types of accidents. Please use both number and name of form when ordering.

- IS-1A—Supervisor Accident Report (8 1/2" x 11" 2 sides).
- IS-3 —Industrial Employee Injury Record (4" x 6" 1 side card).
- IS-4 —Industrial Injury Summary (8 1/2" x 11" 2 sides).
- IS-5A—Monthly Summary of Industrial Injuries (8 1/2" x 4" 1 side).
- IS-6 —A First Aid Report Form. In pads of 100. (Size 4" x 6").
- IS-7 —Department Supervisor's Accident Cost Report (8 1/2" x 11" 1 side).
- IS-8 —Investigator's Cost Data Sheet (8 1/2" x 11" 2 sides).

LIST OF VOLUMES

- General Sessions and Detailed Index to all Volumes
- Aeronautical Industries
- Air Transport Industry
- Automotive and Machine Shop Industries
- Cement and Quarry Industries
- Chemical Industries
- Coal Mining Industry
- Construction Industry
- Electrical Equipment Industry
- Farm Safety
- Food Industry
- Glass and Ceramics Industry
- Metals Industry
- Mining Industry
- Motor Transportation Industry (Commercial Vehicle Section)
- Petroleum Industry
- Power Press and Forging Operations
- Printing and Publishing Industry
- Public Employment (Public Employee Section)
- Public Utilities Industries
- Pulp and Paper Industry
- Railroad Industry
- Rubber Industry
- School and College Safety
- Textile Industry
- Traffic Safety
- Transit Industry
- Wood Products Industries
- Early Morning Sessions
- Home Safety
- Industrial Nursing
- Industrial Subject Sessions (Sponsored by ASSE)
- Maritime Industries (Marine Section)
- Meat Packing, Tanning and Leather Industries



PUBLIC SAFETY MAGAZINE

PUBLIC SAFETY is the best single source of up-to-the minute information in the traffic safety field. Its 32 pages feature stimulating articles by fleet and traffic safety experts, current accident statistics, news of accident prevention, reviews of new safety publications, etc.

SEE PAGE N-46 FOR INDEX AND PRICES

Newsletters

The Council's Industrial membership is divided into 28 Sections. Each Section publishes a monthly newsletter which serves as an idea exchange, keeping members posted on new methods and the activities of the Section.

Newsletters should be provided to the key personnel who have safety responsibility in a specific field—some of your foremen, your nurse and transportation supervisor, perhaps.

Newsletters are edited by member of the Section. They are 4 to 8 pages in length, $8\frac{3}{8}$ " x $10\frac{7}{8}$ ". Published by the following Sections:

- Aeronautical Industries
- Air Transport
- Automotive and Machine Shop
- Cement and Quarry
- Chemical
- Coal Mining
- Commercial Vehicle
- Construction
- Electrical Equipment
- Fertilizer
- Food
- Glass and Ceramics
- Hospital Safety Service
- Industrial Nursing
- Marine
- Meat Packing, Tanning and Leather Products
- Metals
- Mining (other than coal)
- Petroleum
- Power Press and Forging
- Printing and Publishing
- Public Employee
- Public Utilities
- Pulp and Paper
- Railroad
- Rubber
- Textile
- Transit
- Wood Products

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The Fleet Safety Manual shows you how to organize and conduct an effective safety program. It consists of seven parts and supplementary material in a rich maroon loose-leaf binder. The sections include information on: Fleet Safety Program—a general discussion of accident prevention techniques and how they may be organized into a safety program; Selection of Drivers; Driver Training; Accident Reports and Records—a recommended system of recording and analysis including sample forms; and many other specific subjects.

CONSTRUCTION JOB MANUAL

A manual designed for job superintendents that combines plans for safety and efficiency under one cover. The manual includes Safe Practices Pamphlets on construction subjects, Construction Detail Sheets, Industrial Data Sheets, miscellaneous job forms, text, and plans, in leather binder. Page size $8\frac{1}{2}$ " x 11".

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Sponsored by American Institute of Architects and National Safety Council, and approved by the American Standards Association. 86 pages; $7\frac{3}{4}$ " x $10\frac{5}{8}$ ".



when you quote—don't guess
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... the most complete and authoritative source of accident statistics. This annual roundup of facts and figures on accidents in every field of safety puts the answers at your finger tips. It's easy to use, easy to understand. Normally released in July, each issue contains over 100 pages of information on the accident picture for the previous year. Anyone involved with safety needs a copy of this eye-opening fact book.

SAFETY PAYS THE SMALLER BUSINESS

Here's a real eye-opener to help trade associations, insurance companies sell the idea of a planned safety activities to the small plant. This informative booklet stresses the serious financial drain caused by accidents—the direct as well as the hidden costs involved. It also explains how safety improves employee relations, earns public good will; summarizes the minimum elements of a safety program—and shows how to get started.

HOW TO MAKE THE SAFETY SPEECH

A handy booklet presenting the fundamentals of speech making. Designed to show safety men, supervisors and foremen how to put safety talks across to large and small groups. 64 pages, size $5\frac{1}{2}$ " x $8\frac{1}{2}$ ".

SPEAKING STRAIGHT—THINKING STRAIGHT

Four lectures on public speaking given at the 1946 Safety Congress by Dr. Irving J. Lee, Professor, School of Speech, Northwestern University. 24 pages, $5\frac{1}{2}$ " x $8\frac{1}{2}$ ".

SAFETY BELL RINGERS

Booklet of safety slogans useful for speeches, plant papers, bulletin boards, and campaigns. A time-saver for safety men when looking for just the right punch-line. 24 pages, 6" x 9".

INDUSTRIAL SAFETY AND HEALTH BIBLIOGRAPHY

A bibliography of industrial safety and health publications, pamphlets and magazines. Indexed with source listings. 70 pages, size $5\frac{3}{4}$ " x $8\frac{3}{4}$ ".

HOSPITAL SAFETY SERVICE

A monthly packet of hospital safety materials, including posters, instructional materials for personnel training and information for administrators.

HOTEL SAFETY SERVICES

The Council publishes a number of items designed for hotels, restaurants, and similar service industries. Write for information.

OFF-THE-JOB SAFETY KIT

A packet prepared by the Off-The-Job Safety Committee to help Safety men put across a program to both management and employees. Contains about 85 items—booklets, instruction cards, planning material, sources of help, posters, etc.

PACKAGE PROGRAMS

Council engineers will prepare plans for an intensive, short-term campaign covering any specific subject requiring safety instruction for employees. Samples of materials to be used and suggestions on how to use them will be included.

MEDICAL
DIRECTORS

TRAINING
SUPERVISORS

SAFETY
ENGINEERS

TRANSPORTATION
SUPERVISORS

PLANT
MANAGERS

MAINTENANCE
FOREMEN

Administrative Units

**Supply essential safety information
to the right people . . . in balanced quantity
on the right subjects . . . all the year around**

WHAT THEY ARE An Administrative Unit is a cream-of-the-crop combination of monthly, annual, and special Council materials selected to provide a balanced information service for the key men in your safety program. Each Unit includes copies of know-how publications, such as a safety manual, and subscriptions to news-type publications, such as the NATIONAL SAFETY NEWS and News Letter. When ordered as a Unit, these publications cost at least 10% less than they would if purchased individually.

HOW THEY WORK The Unit provides the subscriber with a background of safety information, and keeps him up to date with safety engineering and program developments. The Unit permits participation in Council Sectional activities. The Unit keeps subscribers informed about new Council services and materials. Unit

holders receive all Council Service Guides, announcements, and literature describing new safety aids, as well as samples of many of the new publications.

WHO NEEDS THEM "A" Units are for full-time safety supervisors. "B" Units are for people with substantial safety responsibility: personnel directors, industrial training supervisors, plant engineers, insurance engineers and inspectors, part-time safety supervisors of installations with 100 to 400 employees. "C" Units are for people with incidental safety responsibility: medical directors, chiefs of plant protection, maintenance foremen, part-time safety supervisors of installations with less than 100 employees. In addition to the eight Units described below, there are many other Units for people interested in various fields of safety. Information on these Units will be sent on request.

HOW TO ORDER

When ordering Units, be sure to specify: name and title of the individual, company name, street address, city, zone, and state, type of Unit desired, choice of sections. You'll find a list of Council sections under "News Letters" on page N-11.

TYPE OF ADMINISTRATIVE UNITS	General	Industrial			Transportation			Con- struction
	AA-1	A-1	B-1	C-1	A-2	B-2	C-2	B-11
Services Included:								
1. National Safety News, monthly	1	1	1	1	1	—	—	1
2. Public Safety Magazine, monthly	1	—	—	—	1	1	1	—
3. Sectional Enrollment and monthly News Letter	3	3	2	1	3	2	1	1
4. Industrial Supervisor, monthly	1	1	—	—	—	—	—	1
5. Accident Rates pamphlet, annually	2	1	1	—	1	1	—	1
6. Manuals, as issued								
a. Accident Prevention Manual	1	1	1	—	—	—	—	—
b. Industrial Safety Guide	—	—	—	1	—	—	—	—
c. Fleet Manual, large	1	—	—	—	1	1	—	—
d. Fleet Manual, small	—	—	—	—	—	—	1	—
e. Construction Job Manual	—	—	—	—	—	—	—	1
7. Congress Transactions, annually								
General	1	1	1	1	1	1	1	1
Subject Sessions	1	1	1	1	1	—	—	1
Section Meetings	3	3	2	1	3	2	1	1
8. National Safety Calendar, annually	1	1	1	1	1	1	1	1
9. Accident Facts, annually	1	1	1	—	1	1	—	1
10. Technical releases for your industry, as issued	1	1	1	1	1	1	1	1

Safety

TRAINING INSTITUTE

FIVE-DAY COURSES



FUNDAMENTALS OF INDUSTRIAL SAFETY

This course is to help practicing safety men gain an understanding of the principles and methods of industrial accident prevention—a broad view of the whole job—and practical help for their day-to-day operations.

FOR THE EXPERIENCED SAFETY MAN

It is a stimulating refresher course where he may re-evaluate some of the things he's known, pick up new ideas, talk over specific problems with instructors and class members. (Fully half of the 1,000 graduates had two years or more safety experience before enrolling.)

FOR THE SAFETY BEGINNER

It provides a sound foundation of knowledge on which to build his new career in the industrial safety field.

Students receive a 36-page detailed course outline and a kit of reference materials for follow-up study.

The 1953 courses will be held at the Council's Chicago offices Feb. 16-20, Mar. 9-13, May 11-15, June 8-12, Nov. 9-13, Dec. 7-11.



SCHEDULE OF SUBJECTS

MONDAY

Introduction & Survey of Interests
Basics of Industrial Accident Prevention
Library Services
Workmen's Compensation
Accident Records and Analysis
Plant Inspection

TUESDAY

Personal Factors in Safety
Methods of Developing a Safe Working Force
Getting the Most Out of Council Membership
Fire Prevention
Industrial Health, Hazards, and Controls

WEDNESDAY

The Foreman's Safety Job
How the Safety Man Can Help the Foreman
Electrical Hazards
Maintaining Interest in Safety
Your Safety Problems—Round Table

THURSDAY

Organizing & Operating Your Safety Program
Personal Conferences—with Staff Members
Success Stories from Your Experience
Mechanical Safeguarding
Personal Protective Equipment

FRIDAY

Industrial Safety is a Joint Operation
Your Place in Community Safety
Summary and Synthesis
Publicity in Plant & Community

For further information about these courses, write to the Director of Training, Industrial Department, National Safety Council.

SAFETY MANAGEMENT TECHNIQUES

This course is for safety men who feel that they have sufficient knowledge of the fundamentals, and for those who have completed the basic course. It is taught by Council staff members and outside specialists in the fields of professional writing, speaking, psychology, visual aids and photography. Held April 13-17, 1953.

Services



CONSULTATION SERVICE

The Council's staff of engineers, safety technicians and industrial hygienists are at your command by mail, wire or phone. They are equipped to give you unlimited assistance in planning and running a successful program of accident prevention.

LIBRARY SERVICE

The world's biggest collection of safety information—thousands of publications, articles, photographs, illustrations on every conceivable safety subject—is yours to use. Material on any subject will be mailed to you on request.



AWARD SERVICE

The Council evaluates each organization's occupational accident prevention record on a sound statistical basis. The Award of Honor, Award of Merit, Certificate of Commendation, and President's Letter are given in recognition of various degrees of progress.



EMPLOYEE PUBLICATIONS SERVICE

The Council will keep you supplied with safety publicity material for company magazines, newspapers and bulletins. Mats and proofs of safety cartoons, a clip sheet and a monthly newsletter containing safety news items of general interest are yours for the asking.

NATIONAL SAFETY CONGRESS

The biggest annual event in safety—a week of talks and discussions by the country's leading safety authorities—exhibits of safety equipment. Chicago plays host to the 12,000 delegates in mid-October each year. You can send any number of representatives to learn about the latest safety developments and to meet and exchange ideas with safety men in your industry.



SECTIONAL ACTIVITIES

Part of the income from Council dues and publications covers the costs involved in developing safety codes and safe operating procedures for your industry and other technical studies.

Intra-industry contests are also supported by

dues. These sections sponsor annual contests: Aeronautical Industries, Chemical, Commercial Vehicle, Food, Glass, Marine, Meat Packing, Metals, Pulp & Paper, Petroleum, Printing & Publishing, Public Utilities, Rubber, Tanning & Leather, Textile, Transit, and Wood Products. Any Council member or Federal installation may compete. The only requirement is a simple monthly report. Entrants compete only with organizations of their own size which have similar operations. Each month you receive a report of your standing. If you win, there's a handsome trophy that's yours to keep. Contest rules and report forms are sent on request.



STATISTICAL SERVICE

The information maintained on accident frequency and severity in 200 industries permits you to check your standing and the progress of your program against the records of other organizations doing similar work. Charts and tables are prepared on unsafe acts, agencies of injury and unsafe conditions that lead to accidents.



PUBLIC INFORMATION SERVICE

Due to the steady flow of safety educational material directed to newspapers, magazines, radio and television stations throughout the country, your employees receive, on the average, at least two safety messages a day.



PERSONNEL BUREAU

The Council maintains a confidential file of safety men who are interested in changing jobs. If you need a safety director or engineer, the Council can help you find the right man for the job.

SPEAKERS BUREAU

A file of both volunteer and professional speakers is maintained to place you in contact with persons qualified to give safety talks to any type of audience.



PUBLICATIONS SERVICE

More than 4,000 items produced by the Council for promoting accident prevention are available to members and Federal installations at nominal rates—in most cases at 40% to 50% of the established non-member rates.

Flags and Pennants



GREEN CROSS FLAG

Flown at half-staff, this SAFETY FLAG is a mournful announcement of a lost-time accident. Run to the top on accident-free days, it's a symbol of life free from the tragedies of accidents. Or award it to the department with the best record for the month. Any way you choose to use it, this FLAG adds drama and color to your program. Made of heavy-duty white sheeting, with the safety emblem centered on both sides in permanent color. 4' x 6'. Flame-proofed on request.

AWARD PENNANTS

Available only to Award of Honor or Award of Merit winners, the new style pennant is made of white, extra-heavy nylon. The safety emblem is of green nylon, anchor-stitched on both sides of the pennant. Pennant points are quilt-stitched to resist wind whipping. 3' x 6'.

Organizations which won the former DSS Award may order stars added to the Award of Honor pennant showing the year of each DSS Award.

SAFE DRIVER AWARD BANNER

Dress up your award presentation ceremony with this striking banner. The award emblem is shown in three glowing colors on a white satin background, edged with rich 2" gold bullion fringe. 40" x 41". Sold only to members receiving Complete Motor Transportation Service.

SAFETY DESK FLAG

Miniature silk flag—4" x 6"—on a jet black 10" staff with 1 3/4" base. The safety emblem is in emerald green on a white ground. Also effective as a banquet table decoration.

DSS FLAG

This attractive nylon pennant may be purchased by winners of the Distinguished Service to Safety Award. The Green Cross for Safety emblem and "S" are sewed on both sides of the flag. 4' x 8 1/2'.



SEE PAGE N-46 FOR INDEX AND PRICES

Training Supervisors

the KEY MEN in your safety program

The materials shown on the next six pages are among the most widely used by American industry to upgrade the performance of foremen and other supervisory personnel:



- ▶ 24 training films
- ▶ 2 study-discussion courses
- ▶ 236 short talks on safety
- ▶ a stimulating magazine

- ▶ They teach your foremen the fundamentals of accident prevention as it relates to their jobs.
- ▶ They build interest in your program by showing your foremen how safety boosts production and improves morale.
- ▶ They give your foremen a basic understanding of human relations and show how to use this knowledge on the job.

a new study-discussion course—



PSYCHOLOGY OF SAFETY IN SUPERVISION

This tremendously popular set of booklets was written by Dr. J. L. Rosenstein, noted industrial psychologist, author and lecturer.

All six booklets have a strong safety slant, but more than preventing accidents, they help supervisors develop a good understanding of worker attitude and actions, enabling them to do a better job of controlling their people. The booklets are 6" x 9", printed in two colors. A conference leader's guide is included with each order. These are the six booklets in the series:

YOU CAN'T CHANGE HUMAN NATURE, discusses common peculiarities of human nature, explains why and in what way (1) No one is perfect; (2) People don't look ahead; (3) People resent change; (4) People are led by faith; (5) Human nature is near-sighted; (6) People want to know what's going on; (7) People want something to live up to; (8) People are defensive.

WHAT IS YOUR UQ?, explains the meaning and importance of a supervisor's "understanding quotient"—his ability to understand the attitudes and actions of his workers. The booklet outlines four methods by which a supervisor can develop his UQ.

TEACHING SAFETY ON THE JOB, describes a series of accidents that happened because workers lacked sufficient knowledge or skill. The booklet then discusses the supervisory training methods required to prevent such accidents.

PEOPLE ACT ALIKE, explains in what way normal people are all alike, and in what manner they differ from one another. It discusses basic human wants . . . explains how supervisors can satisfy these wants . . . and points out what allowances should be made for differences in personalities, abilities, and emotions.

SAFETY TAKES TEAMWORK, suggests ways for supervisors to make safety interesting and important to their workers. Holding stimulating safety meetings, encouraging suggestions from workers, using safety literature to good advantage, getting workers to inspect for hazards . . . are some of the techniques discussed.

YOU ARE HUMAN TOO, gives supervisors a "measuring stick" for determining their own strong points and weaknesses. It shows them how to evaluate their habits, their emotional biases, their abilities as supervisors . . . and concludes with a summary of the main points covered in the series.

Industry

gives this magazine to

118,000 SUPERVISORS & FOREMEN EACH MONTH

to help them do a
better job

INDUSTRIAL SUPERVISOR takes over where other training aids leave off. It keeps your foremen and supervisors sold on safety. It impresses them with the importance of the part they play in preventing accidents. It never lets them forget that more efficient production—with safety—is a goal that deserves the best they can give.

Any supervisor worthy of his title is glad to get this magazine because it helps him do a better job in each of his many roles—teacher, detective, inspector, leader, counselor and friend. He has a daily need for the how-to-do-it information, the practical psychology and human relations features.

INDUSTRIAL SUPERVISOR is saved—in whole or in part—for reference and review—by nearly all subscribers. For best results, give each supervisor and foreman his own copy each month.

16 PAGES

5 1/2" x 8 1/2"

INTERESTING ARTICLES

SUPERVISOR CHECKLISTS

READY-MADE SAFETY TALKS

PHOTO STORIES

CONTESTS

5 minute
safety
talk
Profit from the
NEAR-MISSES

Letter
to the Foreman

Psychology

WHAT'S THEIR

Attitude?



Case OF THE PUZZLED FOREMAN



No advertising ... nothing to sell but
BETTER PRODUCTION WITH SAFETY

N-17

2 new training films for supervisors and foremen



PICK YOUR SAFETY TARGET

Shows foremen how to ANALYZE their accidents—ACT on the evidence!

This new film shows your foremen how to make sense out of the jumbled evidence of accident reports. It gives them a simple, workable system for classifying accidents, interpreting the facts, translating them into action.

Once foremen know what to shoot at, they can blast their targets like clay pipes in a shooting gallery—starting on the big one, working down to the smaller targets. It helps your foremen do their jobs faster, easier, better.

PICK YOUR SAFETY TARGET combines cartoon and live shots in an interesting sequence. The 35mm sound slidefilm version is in color (Class III Film). The 16mm sound motion versions are in color (Class VI Film) or black & white (Class V Film). Running time, 13 minutes.

A GRAY DAY FOR O'GRADY

delivers a Sunday-Punch for BETTER PRODUCTION—WITH SAFETY

This humorous film is a jolting experience for the foreman who says:

"I don't have time for safety; production is my job. Safety is okay, but it oughta be done by the Safety Department."

O'Grady is just such a foreman. He has to learn the hard way—by almost losing his chance for a promotion—that accidents are very much his business.

His production-wise boss first lets O'Grady sound off, then lowers the boom by showing him how a couple of recent accidents tied up his time, brought production to a near standstill and spiraled his department's costs. Both the 35mm sound slidefilm (Class I Film) and the 16mm sound motion version (Class V Film) have a 13 minute running time.



SEE PAGE N-46 FOR INDEX AND PRICES



"Human Factors In Safety"

shows supervisors how to UNDERSTAND and USE basic human traits in building a Better Safety Program

Here's how to make your supervisor a dynamic part of your program. Give them this complete film training course that shows how understanding basic human behavior and putting it to use can make Better Safety Supervisors . . . Better Production Men . . . Better Builders of Employee Morale.

Human Factors In Safety is a set of six 35mm sound slidefilms with Leader's Manual. Each film covers one important part of the complex art of handling people. They include tips on breaking in new workers, keeping experienced workers on their toes, gaining and keeping employee respect, cooperation and loyal support.

The course is entertaining, instructive, effective—a film series that will make your foremen sit up and take notice, because they all want to learn more about the fascinating subject of handling people.

Complete set includes an attractive tan leatherette carrying case. Running time of each film is 15 minutes and are Class I Films, except Safety Case Histories which is 30 minutes, and a Class III Film.



THE SECRET OF SUPERVISION

—sets the stage for the other five films. In story form, it illustrates why workers respond enthusiastically to one supervisor, while they resent and rebel against another. It explains that the films to follow show how to be boss and still be liked—the art of handling people.



TEACHING SAFETY ON THE JOB

—shows supervisors how to prepare and give job safety instructions. The four steps of good job training illustrated are: PREPARE—tell the worker what he has to learn and why; PRESENT—demonstrate how the job is done; APPLY—let the worker try it; TEST—spot check until the worker masters the job.



PEOPLE ARE ALL ALIKE

—explains that all normal people want the same things: a feeling of belonging to the crowd, recognition for good work, knowledge of what goes on, the ability to talk things over with the boss, and pride in their jobs. With the help of Ditzel's cartoons, the film shows how supervisors can satisfy these basic wants—get their men to work with them.



EVERYBODY'S DIFFERENT

—points out that while people have many things in common they also differ from one another in personality, ability and background. The film—a Bruce Shanks cartoon special—shows supervisors what allowances to make for these differences . . . how to handle the rough guy, the show-off, the loud-mouth, the day-dreamer, and the practical joker.



TEAMWORK FOR SAFETY

—suggests way for supervisors to make safety interesting and important to their workers. Holding stimulating meetings, encouraging suggestions from workers, using safety literature to good advantage, getting the workers to inspect for hazards . . . are some of the techniques discussed.



SAFETY CASE HISTORIES

—the first safety sound slide of its kind! It presents case histories of accidents that actually happened. After each, the film is stopped so the audience can discuss what caused the accident, and how it could have been prevented. This unusual way of giving the audience a chance to show what they've learned is a wonderful wind-up for a great training course.

"SAFETY MANAGEMENT FOR FOREMEN"

the complete Safety Training film course that makes your foremen the "SPARK-PLUGS" of your safety program

Here's the proven way to get your foremen actively behind you and your company program. Build your foremen training sessions around this series of ten 35mm sound slidefilms with Leader's Manual. They contain all the fundamentals of accident prevention. They sell your foremen on safety . . . show them what and how to teach your workers. How a safety program is organized, the important part the foreman plays, and how the program boosts production and employee goodwill are all fully explained in the course.

Safety Management For Foremen have been acclaimed the most popular safety films ever produced. More than 2,000 sets are now in use—and the Council's files are filled with unsolicited letters in their praise. Hundreds of executives have written in to say that these films have done more than any other training aid to develop the safety knowledge and training ability of their supervisors.

The set is packed in a sturdy leatherette carrying case. Running time of each film is 20 minutes. All are Class II Films.

See how these films make safety teachers of foremen



FOLLOW THE LEADER

Gives a step-by-step description of how a safety program is organized. Assigning safety responsibility, analyzing accident records, holding safety meetings, inspecting, guarding machinery, training employees—are a few of the subjects discussed.



CAUSE AND CURE

Shows how to analyze an accident to determine its real causes. The film covers ten unsafe acts and eight unsafe conditions every foreman should be on the lookout for.



GUARD DUTY

Pictures effective guards for common power machines, and points out that it's up to foremen to see that these guards are kept in place.



SAFETY IS IN ORDER

Good housekeeping from the foreman's angle. Some of the points stressed are: pick out a place for everything and insist that everything be kept in its place; a minimum of raw material on the floor; aisles clear; supervise piling of material; every man keeps his own work area clean.



RIGHT DRESS

It's up to your foremen to see that each of their workers has the right dress for his job. Every foreman should be familiar with the common types of protective equipment pictured in Right Dress; namely, goggles, masks, hoods, gloves, hand pads, wrist and arm protectors, ear stoppers, metal foot guards, safety shoes, aprons, respiratory equipment, and safety belts.



DOCTOR'S ORDERS

Your workers' attitude toward first aid depends on your foremen. Doctor's Orders sells your foremen on the importance and value of prompt first aid. The film also discusses the value of regular physical examinations, and of accident reports on every first aid case.



BRAIN BEATS BRAWN

Improper handling of material causes one-fourth of all reported injuries in industrial plants. Brain Beats Brawn teaches your foremen how to prevent these injuries—teaches them the best material handling practices. The film gives detailed instructions on lifting and covers other material handling hazards.



STOP, LOOK AND LISTEN

This film pictures a typical safety inspection committee at work—shows exactly what to look for when making a plant inspection. "Stop and think about safety long enough to look for unsafe conditions, and listen to safety suggestions" is the committee's slogan.



PRINCIPLES AND INTEREST

To sell safety to workers, your foremen must create an active interest in the subject. Principles and Interest discusses ways in which this can be accomplished: posters, contests, inspections, safety meetings, awards, payroll enclosures, publicity in the plant paper, etc.



PRODUCTION WITH SAFETY

"It takes less time to prevent accidents than to have them" is the theme of this film. And the accident case histories presented in the film prove the point. They give specific examples of how safety increases production and cuts costs. The film also shows your foremen how to give effective, on-the-job safety training.

Speaking OF SAFETY

shows your supervisors how to put across ideas to their workers

Supervisors and foremen are the vital link in communicating management ideas to workers. Make it easier for your men on the line to speak up for safety. Help them talk persuasively, with more confidence and conviction by showing this tested set of training films.

In an easy-moving, interesting style, these films help train supervisors on how to put over your safety messages in a fast, easy-to-understand, easy-to-take way. They stress the prime point of good speaking that gets through to workers with words and ideas that stick.

This set of films was prepared by Dr. Irving J. Lee, Professor of Public Speaking, School of Speech, Northwestern University. It consists of six 35mm sound slidefilms and Leader's Manual packed in an attractive leatherette case. The 16-inch records are pressed for automatic advancement on one side, and for manual advancement on the other side. Running time of each film, 13 minutes. All are Class I Films.



see how this course can help you convert talkers into CONVINCENTS

THE POWER OF SPEECH

An introduction to the films to follow. It lists some of the occasions when foremen and supervisors may be called upon to give a speech, explains the difference between a formal speech and a working speech, and discusses the purpose of a speech, both from the audience and speaker standpoints. The film then outlines the subject matter of the other films in the series.

BUTTERFLIES IN YOUR STOMACH

Describes "that strange feeling that hits you the moment you stand up to talk," explains the physiological reactions that cause stage fright, and shows how to overcome it.

THE KEY TO GOOD SPEAKING

Outlines four methods of preparing a speech, discusses the advantages and disadvantages of each, then explains which method is recommended and why. The film gives a step-by-step description of how to prepare a typical safety speech by using the recommended method.

SEE PAGE N-46 FOR INDEX AND PRICES

ON YOUR FEET



Explains what to do physically when you get up to talk; how to stand; the purpose of moving around and how to do it effectively; what to do with your hands; where to look.

HOW YOU'RE TALKING



Discusses the actual speech making: how loudly you should talk; your vocabulary, and how to phrase your ideas; your attitude—why it is important not to "talk down" to your audience... how friendliness, sincerity, and enthusiasm can make your speech a success.

RING THE BELL



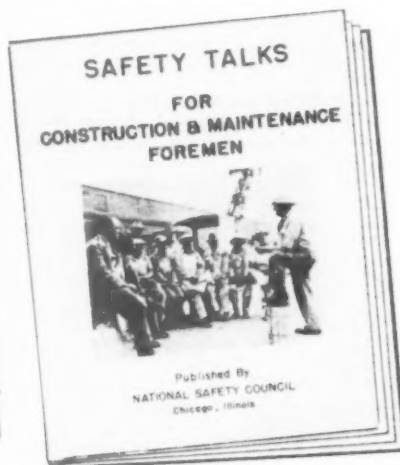
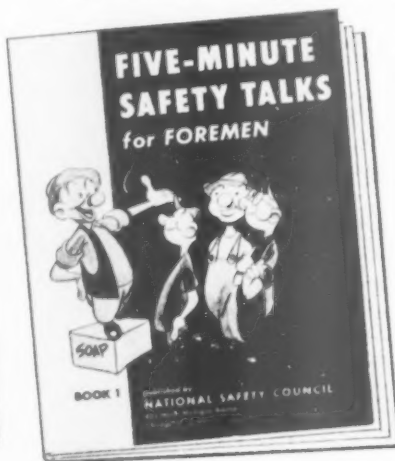
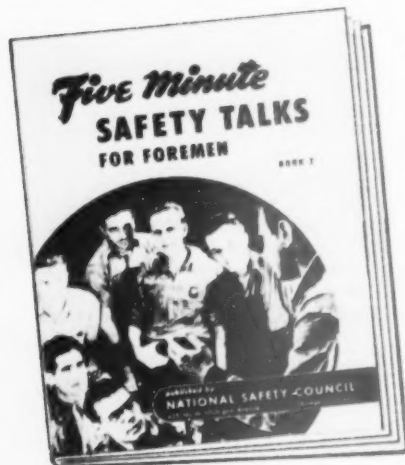
Shows how to hold the attention of your audience from beginning to end. It explains how to "break through the ice"; the value of demonstrations, scale models or mockups, films and still pictures, graphs, charts, and diagrams; how to illustrate a point by telling a personal experience, a humorous story, or by using comparisons.



here's the "down to brass tacks" help
foremen want and need

READY-MADE 5-MINUTE SAFETY TALKS

New approaches to old problems for "tool box" safety meetings. Books 1, 2 and 3 each contain 52 five-minute safety talks for foremen and supervisors, covering all aspects of industrial accident prevention. Many of the talks were written by members of the Industrial Conference—men with years of experience—others by staff engineers. Safety talks for Construction and Maintenance Foremen contains 58 talks written by the Construction Section Executive Committee. Size, 8½" x 11".



a basic-safety booklet course

SAFETY IN FOREMANSHIP

A set of 12 pamphlets, each devoted to a major part of the accident problem, and treated wholly from the foreman's viewpoint. These pamphlets provide a ready-made course for teaching the principles of accident prevention to supervisors. An instructor's outline is provided with each order.

Each is 6" x 9" in size with from four to eight inside pages of swift-moving, narrative-style safety discussion. Booklet No. 1 is an introduction to the booklets to follow. The others are:

2. "The Foreman's Opportunity—Production With Safety" (foremen's responsibility for the safety of workers)
3. "Have You Thought About This?" (the human suffering caused by accidents)
4. "Do You Know How Much An Accident Costs?"
5. "Safeguards—Why and How"
6. "Look Out For That First Step!" (safety instruction for the new worker)
7. "Are You Following Through?" (enforcement of safety instructions)
8. "What Accident Statistics Tell The Foreman"
9. "Why And How To Be A Good Housekeeper"
10. "Detecting And Correcting Unsafe Conditions"
11. "After An Accident—What?"
12. "What About Fire In Your Department?"

SEE PAGE N-46 FOR INDEX AND PRICES

with SAFETYGRAPHS

#1 HOW TO LIFT

Teaches workers efficient and safe procedures for lifting, handling, and carrying materials. The rules stressed are: keep hands clear; get a good grip; have a good footing; bend your knees; keep the load close to you; get help for heavy or awkward loads.

#7 BENCH AND STAND GRINDERS

Discusses eye protection around grinders; spacing for work rests; work pressure; exploding wheels; over-heating; checking for damage; checking speed ratings when changing wheels; ring-testing for defects; hood adjustments; dressing wheels; excessive vibration.

#3 OPERATING A POWER PRESS

Emphasizes guarding—types of guards, and why the operator should use them. Also discussed are: use of sticks to remove pieces that are caught; special tools to insert and remove work; preventing damage to dies; proper dress; handling stock parts.

#4 WEARING GOGGLES

Is a head-long attack on complaint about wearing safety goggles. It shoots holes in time-worn excuses like: "they're too heavy"... "this job'll only take a minute." With humor and logic, it wins over non-believers and reconverts backsliders who have been careless about wearing goggles.

#5 PLANT HOUSEKEEPING

Stresses it's up to workers to wipe up grease, put scrap in a box, keep the work place clear, and lockers clean. It discusses the safe way to stack materials: start foundations; keep piles straight; cross-tie layers; stepback of tall piles; keep aisles and fire exits clear.

#6 LADDER SAFETY

Teaches the four primary rules of ladder safety: 1. Select the right ladder; 2. Inspect it before use—look for weakness or faulty repairs; 3. Secure it—place at proper angle, use non-slip feet, or lash; 4. Use properly—climb the safe way, secure tools.

#7 USING FIRE EXTINGUISHERS

Explains the classes of fires, what type of extinguisher to use for each, and how to use it. It also discusses what to do in case of fire. The safetygraph is most effective when used in a two-part course, part 2 being outdoor demonstrations of extinguishers on actual fires.

#8 ACCIDENTS DON'T HAPPEN

Gets right down to the grass root of safety—to the basic principle that accidents don't happen, they are caused. It discusses unsafe conditions and unsafe acts, cites specific instance of each type, and shows how each accident could have been prevented.

#9 COMMON HAND TOOLS

Shows how to avoid hand and finger injuries caused by hammers, wrenches, chisels, knives, files, and screw drivers. The four ways to prevent hand tool accidents are: use the right tool; use a tool in good condition; use it the right way; keep in a safe place.

#10 PREVENTING FIRE

Explains how it can be prevented by controlling two of the three fire components—heat and fuel. It discusses the major sources of heat in industrial fires; electricity; smoking, and the types of fuel involved in most industrial fires—greasy rags, flammable liquids, etc.

#11 TOE PROTECTION

Is a persuasive presentation of the facts about safety shoes. It examines all the common objections to wearing safety shoes, and proves that each is based on unfounded prejudice or lack of information. It also shows some off-the-job uses for safety shoes.

#12 ELECTRICAL HAZARDS

Sums up important points to remember about electricity and electrical equipment. 1. Use good equipment. 2. Don't overload circuits. 3. Keep away from live conductors. 4. Ground an electrical tool before use. Discusses the common causes of electrical burns and injuries.

#13 INDUSTRIAL POWER TRUCKS

Discusses parking, loading, inspecting trucks, and safe driving practices. Illustrates the wrong ways to use a truck. Covers operating in close quarters, the safe way to approach and enter an elevator, etc. Drives home the main causes of plant truck accidents.

#14 ONLY A SCRATCH

Goes to work on how to get workers to use first-aid on little injuries. Shows how to treat different types of wounds such as punctures, lacerations, and incisions. Sells workers on the idea that protecting themselves against infection is a sign of good sense.



Volume size and new production methods have permitted a substantial cut in Safetygraph prices. See pages 14-16 to 48 for new prices.

Anyone who can read, can give a good safety talk with a

SAFETYGRAPH

backing him up!

15 WANTED—SAFE WORKERS

An informal session on what makes a safe worker. Deals with the worker who understands his job and does it well, and with the fellow who learns the hard way. Covers, in story style, how to act at work, and dress at work. Stresses cooperation between fellow workers.

16 FALLS

Shows that falls are one of the most serious sources of industrial accidents. It covers everything from plunging down unguarded elevator shafts to stumbling over objects. Shows how to prevent falls and discourages the use of makeshift equipment and horseplay.

17 DOES YOUR ACCIDENT SHOW?

Attacks the employee's attitudes which lead to accidents. It shows employees the reasons why people pull boners that can lead to injury: being "safety lazy," failure to follow rules, horseplay, distractions, failure to think, not feeling up to par.

18 MY ACHING BACK!

Treats the subject of back injuries—why and how they happen. The drawings show how the back functions, and what happens when it is strained or twisted. An effective way to drive home the proper ways to lift, and the need for securing help in lifting.

19 STATIC SPARKS AND FLAMMABLE LIQUIDS

It spares no punches in showing your workers how static sparks are caused, how they ignite flammable liquids, how to bond against these dangers. The information will sink in, take hold, and help every time workers transfer flammable liquids.

20 OFF-THE-JOB SAFETY

Doesn't mince words. It is designed to help stop the off-the-job accident toll, at home, in recreation and in traffic. It illustrates hazards to watch out for, and makes workers stop, think and watch their step—and play it safe off-the-job.



21 SAVE YOUR OWN SKIN

Discusses the causes and dangers of dermatitis. It shows workers how to protect their skin; the need for protective clothing, and for keeping it clean and in good condition; discourages the use of solvents, and encourages the use of protective creams, and first aid for all skin infections.

22 CHEMICAL SPILLS AND SPLASHES

Emphasizes the dangers of liquid chemicals, their safe handling and transporting. It instructs workers to clearly identify them; how to empty drums, carboys and tank cars; what to do when chemicals are spilled, splashed on workers, or if they are overcome by chemical vapors.

23 TWO METHODS OF ARTIFICIAL RESPIRATION

Large line drawings and clear-cut instructions simplify the job of teaching the Arm-Lift and Hip-Lift methods of artificial respiration. Safetygraph #23 is the only available visual training aid covering these methods, which are now officially accepted by virtually every national organization concerned with artificial respiration.

24 RAMP SAFETY

Covers a wide range of ramp equipment—fork lifts, cargo conveyors, passenger loading stands, tractors and freight carts, air conditioners and fuel trucks. Pertinent points in safe fueling operations, cargo handling and general ramp procedure are brought to light. Suitable for refresher training or indoctrination of new aviation personnel.

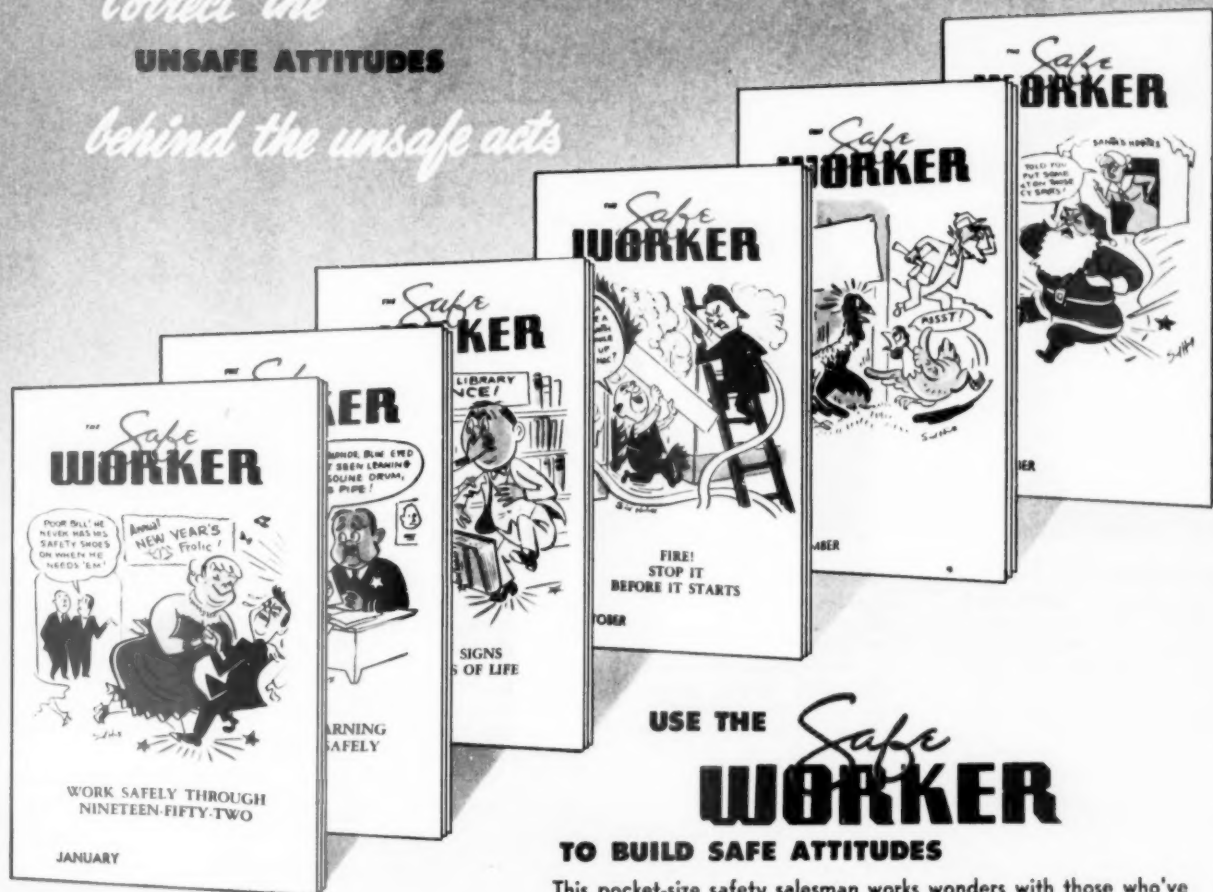
101 WHY BACK INTO TROUBLE?

An illustrated safety talk for commercial truck drivers. It gets down to actual cases and teaches drivers when and why to avoid unnecessary backing, hazards to look for, curb parking hazards, how to back safely, and tells the safe backing speeds.

102 YOUR MARGIN FOR SAFETY AT INTERSECTIONS

Contains suggestions for commercial vehicle drivers on how to prevent accidents at intersections. It warns to be suspicious of all intersections, to avoid sudden stops, to obey traffic signals, how to make left turns, and to be on the alert for pedestrians.

Correct the
UNSAFE ATTITUDES
behind the unsafe acts



It's published monthly
 16 pages
 3 $\frac{3}{8}$ " x 5 $\frac{7}{8}$ " in size.

USE THE *Safe* WORKER

TO BUILD SAFE ATTITUDES

This pocket-size safety salesman works wonders with those who've been told and TOLD—but haven't been sold. It feeds your workers a regular diet of the soundest safety psychology you've ever seen. With cartoons, humor and homey philosophy it shows how foolish it is to fight safety . . . and how it profits a worker to do every job the one right way—the safe way. Yet it's done in such pleasant fashion that 96 out of 100 employees take SAFE WORKER home for their families to enjoy!

With your name imprinted on the cover, SAFE WORKER becomes your own company safety magazine.

Safe RAILROADER

This bi-monthly magazine for railroad workers is patterned after SAFE WORKER. It makes liberal use of cartoons, common sense safety rules and humorous stories to win the employee's interest. It is suitable for all types of railroad men—engineers, firemen, trainmen, shop and maintenance of way personnel.

Safe DRIVER

A big package of safety in capsule form, it influences drivers to accept responsibility for equipment, encourages good driving habits, sells drivers on the benefits of safety. It is written in language drivers understand and believe. They enjoy the cartoon illustrations and like the common sense approach to safe driving. 16 pages, 3 $\frac{3}{8}$ " x 5 $\frac{7}{8}$ ".

- TO WIN BETTER EMPLOYEE COOPERATION
- TO KEEP UP INTEREST IN SAFETY
- TO UPGRADE EMPLOYEE EFFORT



give every employee one of these safety magazines each month—plus one or more of the special subject training booklets shown on the next four pages.

JOB TRAINING BOOKLETS



SHIP SHAPE

A nautical-theme booklet that shows the importance of good housekeeping. Amusing cartoons impress the need for cleanliness, proper storage of tools and materials and fire prevention to reduce accidents. 16 pages, 3" x 5 1/2".



THE FALL GUY

Stresses the hazards that cause falls in industry: poor housekeeping, failure to use handrails, unsafe ladder practices, undue haste, hitching rides, lack of attention, makeshifts and faulty equipment. 16 pages—3" x 5 1/2".



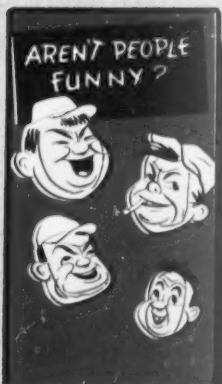
HEAVE-HO!

One of the most complete and effective lifting stories you can give your workers. It takes them through material handling from start to finish, from sizing up the job to actual lifting techniques. Cartoon illustrated, 12 pages, 3" x 5 1/2".



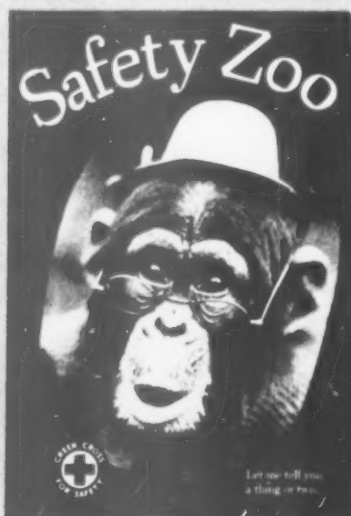
SHOP SAFETY

An illustrated safety manual for workers. Deals with protective clothing, hand and power tools, materials handling, machinery, plus many other safety measures. 32 pages, 5 1/4" x 8 1/4".



AREN'T PEOPLE FUNNY?

Illustrates a number of common human foibles and faults that can lead to accidents. It shows in humorous fashion the relationships between attitudes and unsafe behavior, spotlighting various unsafe characters. 16 pages—3" x 5 1/2".



SAFETY ZOO

Pokes fun at human foibles with an amazing collection of animal photos combined with clever captions. Safety committeemen and foremen will especially enjoy it. 32 pages, 5 1/2" x 8".



SO HELP ME!

A sprightly safety rule booklet jam-packed with no-accident tips, eye catching safety cartoons and lilting safety jingles. An inspirational memory refresher highlighting the tried and true safety precautions. 20 pages—3" x 5 1/4".



DEADLY IDEAS

A new comic-type booklet in full color. It routs out seven foolish attitudes that hamper accident prevention . . . blasts them with a double-barreled charge of logic and lampoon. 16 pages, 4" x 9".



HOW TO PREVENT FALLS

Filled with many safety do's-and-don'ts that prevent falls due to jumping, hitching rides, hurrying on stairs, incorrect use of ladders, running. Cartoon illustrations with serious text. 8 pages, 3 7/8" x 8".



IT PAYS TO DRESS WELL

Covers subject of personal protective equipment—how and what to wear to keep safe. Includes check list of proper protective clothing to use for particular jobs. Cartoon illustrations with factual text. 16 pages, 3" x 5 1/2".



THE MAN WITH THE BADGE

Shows safety committeemen how to deal with committee problems, tips on conducting safety inspections, committee meetings, getting along with supervisors and workers. Cartoon illustrations. 64 pages, 4" x 6 1/2".



I JUST GAVE MY SEAT TO A LADY

A collection of safety cartoons by Walt Ditzen. 120 pages of humorous and enjoyable safety training. Fine souvenir for safety dinners or plant rallies that workers will enjoy for months. 4 1/2" x 6 1/2".



BE FIRE WISE

Dramatic pictures and copy describe the causes and cures of fire. Hits at poor house-keeping, improper handling of solvents, faulty electricity, man-made fires—shows workers how to be fire-safe. 16 pages, 4" x 7".



K. O. DIRT AND DISORDER

Sells workers on plant house-keeping. Colorful cartoons and light-touch writing drive home important points in keeping the plant clean, neat and orderly . . . free from accident and fire hazards. 16 pages—3" x 5 1/2".



A WISE BIRD FOLLOWS THE RULES

Answers a basic need in safety programs — showing workers why rules exist, who makes them, and how they are formulated. Clever cartoons and copy give workers a better slant on the safety program. 16 pages—3" x 5 1/2".



STEPS TO SAFETY

A personal checklist of sound safety rules that apply to any worker on any job—and off-the-job, as well. The straight-from-the-shoulder approach portrays the safety program as the personal concern of each employee. Cartoons on all its 16 pages. 3" x 5 1/2".

OFF-THE-JOB SAFETY



HOLD EVERYTHING!

Deals with accidents in the home, on the street, at play, on summer vacations. Includes an interesting self-test for checking hazards in the worker's home, and a "What's Wrong With This Picture?" traffic quiz. 16 pages—4" x 7".



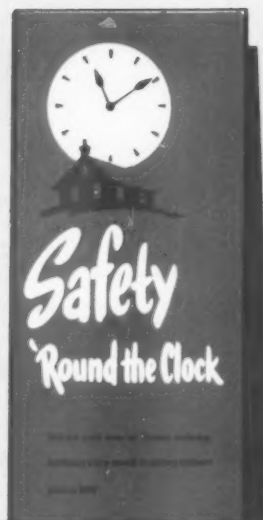
SAFE AT HOME

Gay, informative and packed with suggestions for eliminating accident hazards in the home. Room by room, it illustrates ideal arrangement from the safety angle. Illustrated with 2-color line drawings. 16 pages—4" x 7 1/4".



FOLLOW THE LEADER

Re-teaches the cardinal points of job safety, shows the worker how these same points can protect him while off the job, and impress him with the great job industry does in keeping him safe while at work. 8 pages—3 1/4" x 8".



SAFETY 'ROUND THE CLOCK

Extends interest in safety to the home and to the worker's family. It gives hour by hour hints on home safety, from the time to rise until the cat is put out for the night. Cartoon illustrated. 8 pages—3 1/2" x 8".

HEALTH AND FIRST AID TRAINING



IN THE PINK

A Ditzel cartoon-illustrated booklet presenting basic rules for good health, with a fresh approach. Covers posture, sleep, eye and foot care, weight, cleanliness, and first aid. 16 pages, 3" x 5 3/8".



DOWN TIME

Crammed with helpful facts that keep workers healthy and on the job. Deals with personal housekeeping, proper diet, relaxation and medical care. Fun to read, with lots of cartoons. 16 pages, 3" x 5 1/2".



WHIP YOUR WEIGHT IN WILDCATS

An 8-page cartooned folder on ways to stay young enough to whip your weight in wildcats. The emphasis is on moderation for those who want to keep in trim. 3 1/2" x 8".



STILL WAGGIN'

Encourages workers to get prompt first aid no matter how minor the scratch or injury. It is a new approach on the value of first aid, with amusing cartoons and short factual pointers. 16 pages—3" x 5 1/2".



THE RUSH IS ON

Helps workers have a safe vacation. Handy checklist covers auto safety, water safety, hot weather hazards and first aid. Colorful cartoon illustrations with brief, pointed text. 8 pages, 4" x 8".

HAVE FUN!

A vacation send-off booklet chock full of safety tips, from motoring and swimming to hiking, hunting and camping. Humorous cartoons show workers how to have more fun while avoiding vacation hazards. 8 pages—3 1/4" x 6"

YOUR 10,000 MILE LIVING ROOM

A new slant on safety. Common sense captions drive home the need for courtesy, safe speed, good manners and safe practices to prevent costly accidents both at home and on the road. 12 pages, 3" x 6".

THE DRIVER'S LUCKY SEVEN

Shows that driving a car needn't be a gamble. You can make your own luck by: keeping the car safe; holding down speed; stopping, looking and listening; being in shape to drive; passing with care; and other steps. 8 pages—3 1/2" x 8"



FIRST AID REMINDERS

This set of nine leaflets is designed for quick reference in emergencies, and for effective first aid instruction. Size 3 1/2" x 6 1/4", 4 to 6 pages, in attractive colors.

Titles are:

What To Do For a Wound-For Shock
What To Do For Bleeding
What To Do For A Broken Bone
What To Do For Heat Cramps, Heat Exhaustion, Sunstroke and Fainting
What To Do For Poisoning

Artificial Respiration (Schaffer)
Artificial Respiration (Arm-lift)
What To Do For Bruises, Sprains, and Strains — How To Move An Injured Person
What To Do For Burns and Scalds



WHAT CAN I DO?

Five folders that answer the questions asked by many people:

"What Can I Do About Farm Accidents?"
"What Can I Do About Child Safety?"
"What Can I Do About Traffic Accidents?"
"What Can I Do About Home Accidents?"
"What Can I Do To Make My Community Safe?"

Each of the folders show how much an individual can do to protect himself and others from the tragedy of accidents. 6 pages, 3 1/2" x 6".

Posters

the mass advertising and selling aids for safety

POSTERS SELL YOUR SAFETY PROGRAM BECAUSE

- ★ they are aimed straight at the sources of trouble—the underlying worker attitudes and the acts that lead to accidents
- ★ they bring interest, color and impact into your program
- ★ they cash in on the three basic rules for good advertising — Timeliness, Repetition and Continuity
- ★ they reach your entire audience many times each day at a low, low cost—driving safety messages home at the time and place they can do the most good



The Council's DIRECTORY OF OCCUPATIONAL SAFETY POSTERS illustrates 744 poster in miniature, covering safety, fire prevention and health, classified and indexed for easy reference.

Posters are produced in four sizes: "A" size, 8 1/2" x 11 1/2"; "B" size, 17" x 23"; "C" size, 25" x 38"; and the 8-sheet Jumbo described on the facing page. One "C" poster and one Jumbo poster are produced each month, and are shown in the NATIONAL SAFETY NEWS along with other new posters produced during the year. All posters shown in the Directory and the NEWS are available throughout the year.



Those who do not wish to select their own posters may have them selected by Council staff engineers, and shipped automatically each month. Staff engineers make selections each month to provide specialized automatic poster service for 56 different types of operations. See the DIRECTORY OF OCCUPATIONAL SAFETY POSTERS for a complete explanation of automatic poster service, or write the Council for information.



the

thing in safety!



JUMBO POSTERS

BIG in size

They measure nearly 10 feet high by 12 feet wide . . . an impressive safety display that can't be missed!

Set out in front of your plant, Jumbo Posters are seen not only by your own personnel, but also by the residents of your community and the people who pass by. They feature safety messages of a general nature, suited to all types of companies and all types of readers

BIG in value

Any competent workman can build a Jumbo Poster billboard. Working drawings will be sent on request. Each poster comes in eight sheets for easy handling. The ink and paper used are of the regular outdoor quality, and are weather resistant for at least 30 days. All that is required is a supply of outdoor cooked paste.

Jumbo posters are sold only on annual subscription—12 new posters delivered at monthly intervals.

Make Safety talks that are **REMEMBERED**

... the most popular visual aids for training small groups

Safetygraphs are illustrated safety talks ready for use at a moment's notice. They are complete within themselves; need no time-consuming preparation or costly equipment.

A Safetygraph consists of from 12 to 16 large (18" x 24") spiral-bound picture pages and a complete safety talk—clear-cut instructions, demonstration guides, a series of questions and answers to test the effectiveness of the training as you go, and a summary of the main points.

Safetygraph talks and illustrations are sprinkled with humor to insure the undivided attention of your audience. They can put across your safety message in a smooth, interesting and convincing manner.

Set the Safetygraph on any flat surface, open the cover and PRESTO—the brown leatherette carrying case becomes an easel, with an interesting illustration

facing your group. Start to read. Your safety talk is printed on the backs of the pages in large, easy-to-read type. As you turn each page, group interest is held by colorful cartoons and pictures that highlight your talk and drive home your statements.

You can give the talk as it's written, omit parts if you wish, or insert your own experiences. You can make a short talk or you can stretch it out to a half-hour or more by using all the demonstrations, questions and group participation suggested in the instructions. If you wish to see any of the Safetygraphs before deciding to use them, simply specify "SEND ON 5-DAY APPROVAL" in your letter, order form or purchase order.

Volume sales and new production methods have permitted a substantial cut in Safetygraph prices. See pages N-46 to 48 for new prices.

Safetygraphs employ this tested training method ... 1 - Tell them ... 2 - Show them ... 3 - Let them try ... 4 - Discuss the "reasons why" ... 5 - Test their knowledge ... 6 - Review the essential points

The same type of easel presentation developed by leading sales organizations to make their sales stories clear, believable and effective

The same sort of training aid used so successfully by the U. S. Army in training millions of World War II recruits quickly and thoroughly

Photoscripts

Photoscripts put safety across to your workers with realism. They're short, brief, to the point—they're convincing and easily understood. Actual photos drive home a story that sticks. Handy pocket size makes them ideal for payroll enclosures, handout literature, or mailings. Twelve Photoscript booklets are available as described below:



A CLEAN PLANT

A clean plant is safer, more efficient, a better place to work. This photoscript points out that plant housekeeping is the responsibility of each worker.

PREVENT FIRE

Pictures common fire causes—how they can be spotted and eliminated. Stresses importance of knowing where emergency fire equipment is and how to use it.

GET FIRST AID

Stresses the importance of immediate first aid for ALL injuries. Tells workers that a minor scratch—untreated—can result in a crippling injury; never take a chance.

DRESS FOR SAFETY

Stresses clothing that fits you and your job, and the need for special protection on special jobs. Covers goggles, hard hats, safety shoes, gloves, etc.

LEARN SAFETY

Presents the ten basic rules for the prevention of personal injury. Discusses unnecessary chances, horseplay, handling material safely, first aid, safe clothing, good housekeeping, etc.

FALLS

Falls rank second only to automobile accidents as a cause of accidental death. This photoscript pictures ten safety rules for avoiding falls; eliminating fall hazards.

MACHINISTS HAND TOOLS

Presents four easily-followed rules for eliminating hand tool accidents: 1. The right tool; 2. In good condition; 3. Used correctly; 4. Kept in a safe place.

HANDLE WITH CARE

Presents practical tips on lifting, carrying and piling. Stresses importance of wearing gloves and protective foot gear when lifting.

MAINTENANCE TOOLS

Drives home the A B C's of handling tools. It shows how to prevent accidents by using them correctly, keeping them in good condition, and in the proper place.

PROTECT YOUR EYES

Illustrates the two good reasons for wearing safety glasses—both your eyes. Gives the prescription for eye safety; wear the right glasses, make sure they fit, and keep them clean.

FREIGHT HANDLING

Covers such standard procedures as how to lift; how to carry; how to pile materials; how to operate hand trucks; unloading hazards, and dock plates.

CONTROL OF FIRE

What to do when fires start. It explains the different classes of fires, pictures the various types of extinguishers, how to use them, and on which type of fire.

16 page, pocket-size booklets with dramatic, on-the-job photos.

Driver Training Materials

A complete Service

The materials pictured on these two pages can be provided regularly through the Council's Complete Motor Transportation Service. They are designed to:

- 1 Inspire the "want-to" for driving safely
- 2 Provide the reminder materials, so necessary in building a safe driving attitude
- 3 Provide the information and materials necessary to administer an effective driver safety program

For full details of this service, see Service Guide 106.1, or write to the Council's Membership Service Bureau.

OTHER FLEET MATERIALS

SHOWN IN THIS SERVICE GUIDE

SAFE DRIVER AWARD	page N-37
SAFE DRIVER AWARD BANNER	page N-15
SAFE DRIVER MAGAZINE	page N-23
SAFETYGRAPHS #101 & 102	page N-32
DRIVER TRAINING FILMS	page N-44
FLEET SAFETY MANUAL	page N-11
PUBLIC SAFETY MAGAZINE	page N-10
NEWSLETTERS	page N-11
ACCIDENT FACTS	page N-11
ACCIDENT RATES PAMPHLET	page N-10
CONGRESS TRANSACTIONS	page N-10

DRIVER LETTERS

Individual monthly letters on Council letterheads. Short, to-the-point safety messages . . . informal, friendly reminders on the normal high frequency and high severity accident causes, and seasonal hazards. They are cleverly cartooned and written in the driver's everyday language.



DRIVER MEMO PADS

Pads for jotting down short safety reminders for your drivers. Each memo sheet carries in miniature form a reproduction of a current safety poster. The memo pads are available only in sets. A set consists of 48 pads, each pad bearing a different poster reproduction, with 25 memo sheets to a pad. Size 4" x 4 1/2".

SAFETY POSTER SETS

Popular, colorful, driver safety posters from the world's largest collection. Each poster presents driver situations in a new, attention-getting approach with special emphasis on important safe driving fundamentals. They are slanted to season, weather and the specific needs of fleet operators. Available in two sizes: large (17" x 23") and small (8 1/2" x 11 1/2"). A set consists of two different large and two different small posters mailed each month for a year. Sets should be ordered to provide a weekly change of posters on each bulletin board for drivers.



EXPERTS DON'T SKID

Cartoon-illustrated leaflet that promotes safe winter driving. Prepared by the Committee on Winter Driving Hazards. 4" x 6".

FOR EXPERTS ONLY

A booklet that sells drivers on keeping a perfect no-accident record. Gives the rules for qualifying for the National Safety Council Safe Driver Award, and stresses the safety measures that must be taken to stay clear of the situations that cause accidents. 24 pages, 5 1/2" x 8 1/2".



SAFE DRIVER AWARD SHOULDER PATCH

An attractive, washable, silk-embroidered emblem that can be worn on jackets, sweaters or shirts. It is an exact replica of the Safe Driver Award, and is available in some years as award pins. Size 3" x 4". Sold only to members receiving the Complete Motor Transportation Service for presentation to certified drivers.



Driver Training Materials

HOW TO BE A SMOOTH OPERATOR

A new booklet revealing the secret of smooth operation—the skillful coordination of driver, vehicle and traffic. Points out how it will prevent accidents, spare the driver's nerves and stretch the life of his vehicle . . . leave him relaxed and pleased with his job at the end of a day. 24 pages, 3" x 5".

THE YOU FACTOR IN ACCIDENT CAUSES

Aimed at the basis, underlying personal factors that cause transportation accidents. Its 24 pages strike home with every YOU factor from temper to worry. The cartoons invite reading and the hard hitting text spares no punches in showing drivers how important these factors are in accident causes. 3 3/8" x 5 1/2". Specify choice of Truck or Bus edition.

DEFENSIVE DRIVING

Two popular 24-page booklets filled with sound tips on good driving, backed up with cartoon illustrations picturing the folly of aggressive or sloppy driving habits. Designed to convince drivers that preventing accidents is not so much the knack of squeezing out of tight spots as it is the ability to anticipate and avoid such situations in the first place. 3" x 5". Specify choice of Truck or Bus edition.

HERE ARE THE FACTS!

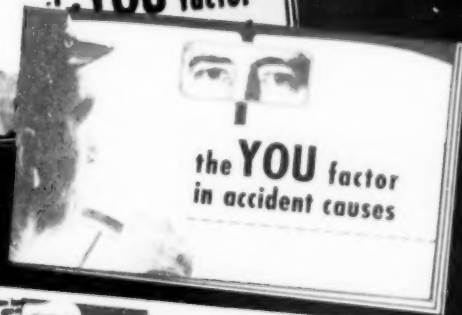
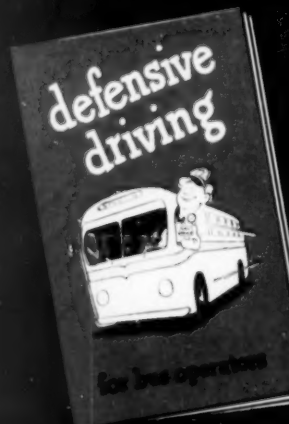
A comprehensive 20-page booklet summarizing the results of tests and research projects conducted since 1939 by the Committee on Winter Driving Hazards. It explains and illustrates basic winter driving rules covering techniques, equipment and safe practices in a logical and convincing manner. 3 3/4" x 8 1/2".

DASH STICKERS

A new type of ever-present safety reminder that adheres to any type of surface! They are bright, 4-color safety ads that keep drivers on their toes. Carefully chosen subject matter makes them equally effective for truck drivers, bus operators and passenger car drivers. 3" x 6". Sold only in sets of 12 different stickers.

DASH CARDS

Colorful, illustrated cards to keep drivers safety-awake when they are behind the wheel. The 3" x 6" cards slip into metal holders fastened to the dash. Subscription includes 24 cards printed on both sides—enough for 4 changes per month. Metal holders are free with each set. Specify choice of Truck or Bus sets when ordering.



Safety Decals

SPRINKLER VALVE
DO NOT CLOSE UNLESS
AUTHORIZED

DANGER
WEAR GOGGLES
WHILE OPERATING
THIS MACHINE

KEEP FLOOR CLEAN
AROUND THIS
MACHINE

ACTUAL SIZE
2" x 3 1/2"

CAUTION
STOP MACHINE
BEFORE MAKING
ADJUSTMENT

Safety decals attached to machine frames, guards, fuse boxes and fire doors constantly remind workers to observe safe practices and follow instructions. These colorful decals conform to ASA specifications. Order by letter and number code. Available only in size 2" x 3 1/2".



A Green Cross for Safety emblem printed in white letters on green ground, with the words "MEMBER NATIONAL SAFETY COUNCIL" underneath in green. For use on office doors or windows. Emblem is 3 1/2" in diameter.

SAFETY DECALS

- S- 1—Sound Warning at Corners and Aisle Crossings
- S- 3—Do Not Talk To or Distract Operator
- S- 4—Before Starting Be Sure Everyone Is in the Clear
- S- 5—No Riders
- S- 6—Keep Tools in Safe Condition and in Proper Place After Use

CAUTION DECALS

- C- 1—Shut Off Machine When Not in Use
- C- 2—Fire Door—Do Not Block
- C- 3—Shut Off Engine Before Refueling
- C- 4—To Be Operated Only by Authorized Employees
- C- 5—Pull and Lock Switch Before Oiling, Adjusting or Repairing Machine
- C- 6—Use Brush to Remove Chips

DANGER DECALS

- D- 1—Do Not Wear Gloves While Operating This Machine
- D- 2—High Voltage
- D- 4—Keep This Guard in Place
- D- 6—Wear Goggles While Operating This Machine
- D- 7—Flammable—Keep Flames and Heat Away
- D- 8—Corrosive Liquids—Use Personal Protective Equipment

FIRE DECALS

- F-1—For Wood, Paper, Textiles and Rubbish (Class A Fires) Not Electrical Equipment
- F-2—For Wood, Paper, Rubbish and Burning Liquids (Class A & B Fires) Not Electrical Equipment

- S- 7—Keep Floor Clean Around This Machine
- S- 8—First Aid Kit
- S- 9—Only Authorized Persons May Change Fuses or Make Repairs
- S-10—Keep This Space Clear
- S-11—Deposit Waste Material Here
- S-13—Avoid Falls. Walk—Do Not Run—Use the Handrail
- S-14—Please Keep Your Locker Clean

- C- 7—Stop Machine Before Making Adjustments
- C- 8—Use Fuse Puller to Remove Fuses
- C- 9—Do Not Operate Without Guards
- C-10—Keep Guards in Correct Adjustment
- C-13—Ground Equipment Before Use
- C-14—Do Not Use Near Electrical Equipment
- C-17—Do Not Open While Machine Is in Motion

- D- 9—220 Volts
- D-10—440 Volts
- D-12—No Smoking
- D-13—Wear Goggles in This Area
- D-14—Oxygen—Keep Oil and Grease Away
- D-15—Acid
- D-16—Caustic
- D-17—Replace Guard Before Using Machine

- F-3—For Burning Liquids (Gasoline, Oil and Paint and Electrical Equipment) (Class B & C Fires)
- F-4—Sprinkler Valve—Do Not Close Unless Authorized

Badges ... Pins ... Trophies



NO-ACCIDENT AWARD PINS *

This handsome screw-post pin is the ideal recognition for workers who have done a good safety job. Each pin shows the exact number of accident-free years. 1 to 4 year pin, bronze; 5 to 9 year pin, silver plate; 10 to 40 year pin, gold plate. May be awarded according to your own rules, but may not be used as driver awards. In ordering, specify quantity of pins desired for each year. $\frac{3}{4}$ " diameter. (Sold only to members and U. S. Government installations.)

SAFETY CONTEST TROPHY *

An attractive award plaque to reward the best safety record in inter-departmental or inter-organization contests. They will be proud to display this handsome 6" x 7 $\frac{1}{2}$ " solid bronze casting on an 8" x 10 $\frac{1}{2}$ " walnut plaque. Space for engraving inscription. (Sold only to members and U. S. Government installations.)

* In ordering please submit brief description of the plan for use, including the basis for determining who will receive awards.



COMMITTEE BADGE

A handsome emblem of service in glittering green and white hard-fired enamel. The outline and lettering has a polished gold finish; the entire badge is protective coated. Nickel silver safety catch. 1" diameter. Individually card-mounted and enclosed in glassine envelope.



PERSONALIZED

COMMITTEE BADGE

An inexpensive way to produce your own company badge. Made-to-order, with the same specifications as the stock committee badge, plus the addition of gold side bars and a ribbon panel on the top. Top and bottom panels may be die struck and enameled with any title or company name for an initial die charge of \$20.00 per panel (\$40.00 for both panels). Die charges will not be repeated on subsequent orders. No charge is made for use of stock "COMMITTEE" die in top panel.



SAFE DRIVER AWARD

Recognized as the national standard for safe driving achievement—the most valued award a professional driver can receive. Qualified drivers employed by organizations using the Complete Motor Transportation Service receive this gold plated award each year; it cannot be purchased. In three styles—cap or lapel pin, and key chain—with an individual certificate of qualification. (See page N-34.)

SAFETY LAPEL BUTTON

The Green Cross for Safety emblem, $\frac{3}{8}$ " diameter, in satin finish silver plate, with sparkling green enamel. Popular screw-post back.

SAFETY PATCH



A traveling safety reminder. The Green Cross for Safety emblem for use on jackets, sweaters, shirts, caps, etc. Handsomely embroidered in washable green and white silk. 2 $\frac{1}{2}$ "

POSTER ELECTROS

You may obtain electrotypes of any poster illustrated in one color in the poster directory or in the NATIONAL SAFETY NEWS. Electrotypes are approximately 1 $\frac{1}{8}$ " x 2 $\frac{1}{2}$ ", suitable for use in plant publications and bulletins. Order by poster number.

POSTER FRAMES

Black enameled metal frames, made to fit National Safety Council posters. Especially useful when display boards are not available, or to spot a single poster at a strategic point. Frames are large enough to accommodate cardboard backing and a glass or plastic sheet in front of the poster.

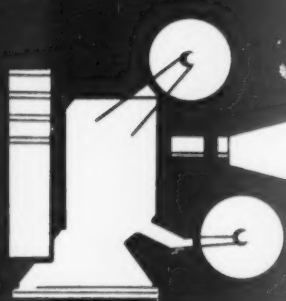
PAYROLL ENCLOSURES

Miniature black and white reproductions of safety posters. You select 12 different posters from those shown in one color in the poster directory or in NATIONAL SAFETY NEWS. The enclosures are printed 12 to a sheet and then cut to 1 $\frac{1}{8}$ " x 2 $\frac{1}{2}$ " size. Minimum order of 1200 enclosures (100 sheets) is required. Quantities of each of the miniatures selected must be identical. When more than one group of 12 are ordered, each group of 12 is priced as an individual order. Quantities of each of the miniatures selected must be identical. See Directory of Occupational Safety Posters for details.

GREEN CROSS ELECTROS

An electrotype of the safety emblem suitable for use on letterheads, booklets, and in advertising. The Green Cross for Safety emblem may not be used directly or by implication to endorse or approve a commercial product. Members may use the words: "Member, National Safety Council," in conjunction with this registered trademark. Mats and proofs of the emblem in $\frac{1}{2}$ ", 1" and 2" sizes, free.

SEE PAGE N-46 FOR INDEX AND PRICES



Safety

TRAINING FILMS

Trainees learn as much as 55% faster, and remember up to 70% more—and longer—when films are used to help teach. This means that you can cut down new-worker safety training time, give fewer refresher courses, and still get better results by using films.

Each National Safety Council film has been carefully planned to do a specific job in your safety program—to serve as an effective discussion springboard for supervisor and worker meetings. Detailed leader's manuals provide helpful tips on conducting the meeting, discussion outlines, quiz questions, and demonstration ideas.

The range of subjects is broad. All fundamental and general interest films are designed to cut across industry lines. Specific industry backgrounds are minimized; emphasis is on safe practices—not environment. Where necessary—in the construction, railroad, logging, mining industries—special films have been prepared.

35mm Sound Slidefilms

All of the films described on the following six pages consist of a 35mm filmstrip and a 33 $\frac{1}{3}$ RPM recording. Fifteen of these films are also produced in 16mm sound-motion, a listing of the titles is shown on page N-45. All 35mm sound slidefilms released since 1948 (marked with this symbol $\text{---}\text{I}\text{---}$) can be shown with either a standard projector or the new automatic 30-50 low frequency models that have taken the "beep" out of slidefilms. One side of the sound slidefilm recordings uses an inaudible signal to automatically advance each picture in synchronization with the narration.

Previews

Films will be sent on approval. Preview service charge is applied against the purchase price if the film is retained. Preview and rental service is available only within the continental limits of the U.S.A. unless the member agrees to pay airmail postage both ways. Canadian members may obtain all Council-produced films for either rental or preview from the Canadian Film Institute, 172 Wellington Street, Ottawa, Ontario, Canada.

Replacements

Filmstrip or record replacements may be purchased at $\frac{1}{4}$ the price listed for the complete film if the damaged record or film is returned with the order. Otherwise cost of replacement is $\frac{1}{2}$ the price listed for the complete film. Replacement footage for all 16mm motion pictures is available at laboratory cost.

2

BRAND NEW FILMS



YOU CAN TAKE IT WITH YOU

A humorous story of the worker who won't go home. After a series of nerve-shattering home accidents and near misses the previous Saturday, he just can't bring himself to face it again; decides to sleep in the locker room. It takes a lot of doing, but the boss finally convinces him that he CAN take the plant safety program home with him; stop home accidents just like they do on-the-job. The final scene shows the worker headed for home, determined to weed out the booby-traps—a safety poster tucked under his arm. The film touches on all phases of home safety from housekeeping, ladders, and electricity to lifting and home repairs. And it does a subtle employee relations job too, by playing up the success of your company safety program. 13 minutes. In full color. [Class III Film] Also 16mm sound-motion in full color [Class VI Film] or black & white [Class V Film]. $\text{---}\text{I}\text{---}$



AN ACCIDENT HAPPENS TO SAM

The job of the typical industrial nurse goes a lot further than bandages and iodine. In most plants, she's the safety man's star safety salesman. Your workers will learn and laugh as the accident-wise Miss Miller proves to skeptical Sam that accidents DON'T just happen. After listening to Sam pop-off about safety and first aid, she decides it's high time to take him in tow; show him that accidents aren't funny—that they can be stopped by using a little common sense. With the superintendent's blessings, she puts him to work as a nurse's aid. She first softens him up by showing him some "scare" pictures of major accident injuries; then follows-up by explaining why they happened. By the end of the day, Sam's converted. 13 minutes. (Class I Film) Also 16mm motion picture. [Class V Film]. $\text{---}\text{I}\text{---}$

"PERSONAL SIDE OF SAFETY"

**corrects unsafe attitudes by helping your workers
to ANALYZE and UNDERSTAND themselves**

The oldest—certainly the knottiest—problem for most safety men is what to do about the "human element" in accidents. This great new series was developed in cooperation with the U.S. Department of Labor to give you the answer.

With a front-door approach and stair step logic, PERSONAL SIDE OF SAFETY reduces this complex attitude business to easily understood fundamentals. Through the course of five films, it builds a convincing formula for personal safety that shows a worker that no one can keep from getting hurt if he doesn't help. He must know his job and know himself; be the master of his habits and emotions; believe in the power of safety; **WORK AT IT!**

The message is believable because each worker sees himself in the humorous cartoon sequences and actual work scenes. It's painless training at its best.



SAFETY RECORD

Emphasizes that award winning safety records don't "just happen." They are the results of careful planning; hard work from top level brass right down through the ranks. Most of all, they are the accomplishment of the individual worker who adopts the attitude . . . "I'm not going to have an accident" . . . then works at it; not only for himself, but also to make sure that nothing he does will result in hurting a fellow worker. This kind of teamwork also means selling the idea to others. 15 minutes. (Class II Film)



2 STEPS TO SAFETY

There's more to it than just making your mind up to be safe. This film shows that you've got to mix determination with knowledge and experience. First, you must **KNOW YOUR JOB**—be thoroughly aware of the possible hazards . . . how to avoid them. Just as important, you have to **KNOW YOURSELF**—the personal peculiarities and limitations that make you fair game for accidents; how to control or compensate for them. 15 minutes. (Class II Film)



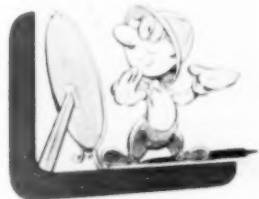
LET HABIT HELP

Once you have the determination and knowledge, you have to be sure you hang on to them—make them automatic. **LET HABIT HELP** explains the steps in developing a new habit pattern; how to erase an unsafe habit. From the time you awake until you go to bed at night, each routine task is accomplished largely by one or more of the many thousand habit sequences each of us forms. It's just as easy to build safety into your habits as it is to go on doing things unsafely. 15 minutes. (Class II Film)



GET A GRIP ON YOURSELF

Enlarges on the idea of self understanding. With rib-tickling cartoons it shows how our feelings and emotions can undermine our determination . . . derail our safety habits into one of those "how could I have been so dumb" accidents. **GET A GRIP ON YOURSELF** then explains how to recognize the danger signals so that you can apply the brakes in time—make your emotions work for instead of against you. 15 minutes. (Class II Film)



DECIDE TO BE SAFE

Wraps up the formula for personal safety with a quick review of the key points made in the previous films. To make it all work, it explains, each of us has to underline our efforts with determination—a sincere decision to be safe. 15 minutes. (Class II Film)

Also available in 16mm sound motion versions covering exactly the same subject matter as the slide film. Interest is added through the skillful blending of motion and still scenes with

unusual optical effects to give the impression of continuous motion throughout. See page N-45.

the 10 film worker t



EVERYTHING you need to run a complete course in safety fundamentals.

Ten of the sound slide films produced by the Council have been selected for use, in a series, as a basic safety training course for workers. By progressing step-by-step through the course, workers obtain a well-rounded fund of safety knowledge in amounts they can absorb and remember. The course can be put on easily, and with practically no time-consuming preparation. With the leader's manual provided for each subject, anyone can do an effective job. The set is packed in a sturdy leatherette-bound carrying case.



FIFTEEN MINUTES TO GO

Dramatically compares the odds of getting an infection in a small cut or scratch with "Russian Roulette". They're in your favor, but would you take the chance. You'd have nothing to gain—everything to lose. Actual photos of wounds, burns, and scratches before and after infection lends the realism that will convince your workers that they're playing it smart if they invest "15 minutes" to get immediate medical attention. 15 minutes. (Class I Film)



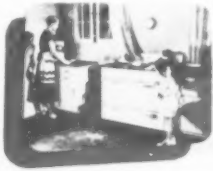
SAFE HANDLING OF MATERIALS

One-fourth of all industrial accidents involve handling of materials. Every worker—regardless of industry—lifts, carries, or handles some type of material every day. Whether it's an office or a heavy steel foundry, the same fundamental problem exists; the same simple precautions apply. With simple illustrations this film leads your worker through all the safe material handling "do's"...backs them up with pictures of accidents that can happen if you ignore them. 15 minutes. (Class I Film)



NO LAUGHING MATTER

Here's a film that covers falls from every angle. The scene is a film studio where a group of safety experts are meeting to discuss a training film on fall prevention. As the plan session progresses, each man describes the fall hazards peculiar to his industry—how to prevent them. Clever flash-back illustrations show how to stop falls in every work situation: trucks and trailers, ladders, scaffolds, elevator shafts, stock piles, stairs. Emphasizes the importance of keeping the work area clean; eliminating oil and grease on floors. 15 minutes. (Class I Film)



WHAT'S YOUR SAFETY I. Q.?

Aimed squarely at one of your hardest-to-get-at problems—the off-the-job safety of your workers. Using the popular "what's wrong with this picture" technique, this film gets your workers to thinking...talking about safety in the home, in traffic, and at play. After each set of pictures is flashed on the screen, the audience is given 15 seconds to spot the safety errors. They then check their answers as the narrator identifies the hazards; explains how to avoid them. 15 minutes. (Class I Film) Also 16mm sound motion. (Class V Film) ▶



CAUSE FOR ALARM

Gives a step-by-step description of what to do in case of fire; how to turn in an alarm—then what to do while you're waiting for the professional fire-fighters. In simple terms, it explains what fire is; how they start. It shows workers how to recognize the difference between Class A, B, and C fires; the types of extinguishers—when and how they should be used. 13 minutes. (Class I Film). Also 16mm motion picture (Class V Film) ▶



FREIGHT HANDLING SAFETY

Shows the worker how to lift, carry, and pile materials; how to safely operate a hand-truck. The main emphasis is on freight car and motor truck unloading hazards: the safe way to open a freight car door; lowering the dock plate into position and anchoring it; how to guard against "sleepers." The film is in story form and features a luckless cartoon character named Happy Jack whose exploits will hold your workers' interest. 11 minutes. (Class I Film) Also 16mm motion picture. (Class V Film) ▶

training course



KEEP IT CLEAN

Sells the idea that it's easy to keep the plant ship-shape if everyone cooperates—does his small part of the job. Presents an easy-to-follow housekeeping checklist keyed to a series of before and after shots of typical plant scenes. Emphasizes that a clean plant makes the job easier, safer, a lot more pleasant. 15 minutes. (Class I Film)



EASY ON THE EYES

If you're having trouble enforcing your goggle rules, here's a two-fisted film that will open their eyes. It leads with a dramatic, emotional appeal that shows what it means to be blind or lose the sight of an eye. After this impact, your workers will be an attentive audience to the job-by-job explanation of the type of eye protection required; the three easy rules for eye safety. 20 minutes. (Class I Film) Also 16mm sound motion. (Class V Film)



STOP THE FIRE THIEF

Shows workers how to prevent fires before they start. Actual fire scenes, illustrating how costly and terrible fire can be, lead into a discussion of what can be done to root out the hazards encountered with: flammable liquids, electricity, hot slag, sparks, friction, etc. 13 minutes. (Class I Film) Also 16mm sound motion. (Class V Film)



SAFE IN HAND

Consists of two parts. Part I, Machinists' Tools, shows how to pick the right tool for the job; how to use each safely. Covers all the common hand tools. Part II, Maintenance Tools, discusses the heavier tools used by plant maintenance crews. 12 minutes for each part. (Class I film)



LEARN AND LIVE

No matter how specialized your operations, your company rule book probably includes the 10 fundamental safety rules discussed and illustrated in LEARN AND LIVE. Too often when workers read these rules they get little out of them; they are unable to visualize from a few words on a printed page what can happen if the rules are ignored. This film lifts these rules from your book and brings them to life with action shots showing how and why they are applied. 15 minutes. (Class I Film)



CAUSE AND CURE

... he was just careless ... the floor was slippery ... the grinding wheel broke ... he disobeyed instructions—these are just a few of the answers too many foremen give when asked why an accident happened. Accidents have definite causes; just as definite cures. This film shows—with actual case histories—how supervisors and workers can root out accidents before they happen; what to look for and how to correct it. 17 minutes. (Class II Film)



MY EYE DEAL

Color cartoon film that combines giggles with goggles. Tells the humorous story of Herkimer and how he learned—by a near miss—the value of wearing safety goggles. Here's 10 minutes of good entertainment with a moral that your workers won't soon forget. (Class III Film)



INVISIBLE RED INK

Originally planned as an appeal to business management to recognize the importance of planned safety activities, this film is equally good as an employee indoctrination film. It will show your workers the "why" behind your safety program—what it means to them and to your company; that their paychecks ... possibly their lives are tied up with its success and their support. 20 minutes. (Class VIII Film)



WOODWORKING MACHINES

Covers all phases of safety in woodshop work from guards and machine operation to housekeeping and eye protection. Gus, an old, safety-wise woodworker, takes two new safety committee recruits on a machine-by-machine tour of the plant. With actual demonstrations, he shows them the importance of guards; how they work, as well as the safe practices to follow in using saws, splitters, jointers, shapers, and planers. 17 minutes. (Class I Film)



LABORATORY GLASSWARE

Most laboratory accidents are caused by improper handling of glass equipment. This film shows the simple precautions to observe: wear gloves, fire-polish sharp edges, don't try to force glass into the wrong size rubber hose, loosen tube from stopper before you try to take it out, clear solvents from glassware before using, clamp equipment carefully, clean up broken glass immediately. 10 minutes. (Class I Film)



GIANT HANDS OF INDUSTRY

Points out that the two main causes of crane accidents are failure to use correct hand signals and failure to keep in the clear. Explains the three basic movements of a crane; the standard hand signals for each. The film goes on to give other safety tips: don't overload—check load-limit charts, how to place sling hooks, balancing long objects, and how to use hand hooks to guide load. These points are driven home by showing accidents that happened when someone "forgot." 15 minutes. (Class I Film)

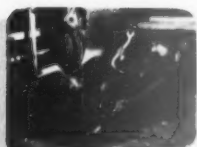


CONSTRUCTION EQUIPMENT SAFETY

A dozen common mistakes account for three out of four accidents with construction equipment. Among the safety rules covered are: keep equipment a safe distance from power lines, make sure everyone is clear before you move machinery, block suspended parts before repairing or moving. A must film for all tractor, crane, dragline, shovel, and truck users. 20 minutes. (Class I Film)

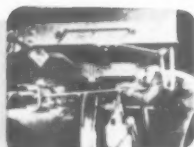


4 Railroad Films



MEN AND MOTIVE POWER

Shows that while railroad roundhouse is a busy place, it can be a safe place too, if everyone observes the fundamental safety rules. It explains that moving engines and cars are one of the biggest hazards; tells workers to look both ways before crossing tracks, don't cut between or under cars. Shows how to work safely on top of tanks and boilers, in cabs, and on ladders and scaffolds. Stresses trip and slip hazards on floors; need for housekeeping. Film concludes with a discussion of shop tools, mechanical material handling equipment, protective equipment, importance of first aid. 15 minutes. (Class IV Film)



KEEP 'EM ROLLING

There's a lot of behind-the-scenes preparation before freight cars get the go-ahead signal. Here's a film that will tell your car men both the big things and the little things they have to do to protect themselves and others from injury. The film stresses the precautions necessary in working near moving cars; use of blue warning flags; how to safely cross between cars. Also discusses the use of jacks and blocks; handling of coil springs; fall hazards; use of burner's torch, sledges and other tools; lifting with cranes and hoists. 15 minutes. (Class I Film)



MEN OF MAINTENANCE

Deals with the diversified safety problems of the men who construct and maintain the roadbeds, buildings, bridges, and signals. Maintenance work is hazardous; demands extra precaution. Film stresses the safe practices relating to motor track cars; operation, inspection, emergency signal equipment, loading and placing of tools, getting the car on and off the track. Also discusses the safe use of all the basic tools and equipment: adzing machines, pneumatic stamping machines, ballast cleaning machines, wrenches, claw bars, jacks, and tongs. Shows how to lift and carry rails and ties; the need and use of protective equipment. 15 minutes. (Class I Film)



SAFELY WE WORK

Long years of experience have established the safe ways of doing every job in railroading. Moving quickly from point to point, the film is aimed at the fundamentals you want your new workers to learn. Explains how to get on and off a moving car; how to climb freight and tank cars; how to ride the top of a car or on the still step of a box car or gondola. Points out the warning signs in territory where car riding is prohibited; the safe use of hand, power, and air brakes; how to walk across or between tracks—many other vital safe practices. 15 minutes. (Class VIII Film)



OPERATING HEAVY DUTY TRUCKS SAFELY

Here's a brand new training film covering the highly specialized operation of heavy earth-moving trucks. With on-the-job photographs, it covers all the hazards the operator will encounter; the safe practices that must be observed in driving over roadways, dumping, towing, and loading. The film is suitable for construction companies, quarries, and all types of open-pit operations. It's an excellent indoctrination film for new drivers; an effective refresher for your experienced men. 12 minutes. (Class I Film) ✚



SAWMILL SAFETY

A mill superintendent's tour of the plant with a new worker sets the stage for a job-by-job summary of safety in all phases of sawmill operations. He is shown the precautions the head sawyer, dogger, and tail sawyer must take—how their jobs affect the safety of every man on the crew. He's then shown the pond and what's done there to prevent injuries. Back in the mill, the superintendent emphasizes the importance of keeping guards in place; the safe practices in using or working near edgers, cutoff saws, small pull saws, planers, piling machines, and carriers. The need for prompt first aid, housekeeping, personal protective equipment are also stressed. 17 minutes. (Class I Film)



TIMBER

A logging company's safety committee proves "there's something to this safety business" to the skeptical, old-time logger. Using a check list of the chief causes of logging accidents, the committee draws upon the experience of its members to explain the common sense precautions for each operation. Falls are the number 1 problem, but they could be eliminated if: the men would walk only on firm, big logs; look out for loose bark; not try to jump too far from log to log; watch their step. They then move on to the safe practices in using axes and saws; how to avoid injuries from widow makers, rolling logs, lines and gear, cats and trucks. 17 minutes. (Class I Film)



MINUTE MEN

Dramatizes the hazards involved in the work of utility company linemen—the safety precautions they must observe. "Service with Safety" is the slogan of the utilities industry, and they back it up with extensive safety training. The film goes on to illustrate a typical training program—the safe practices stressed. Covers: how to safely climb a wooden pole, how to work on top of the pole, the use and care of protective equipment such as rubber gloves and safety belts; how to use a grounding stick, instruction in artificial resuscitation. 20 minutes. (Class I Film)

PACKED WITH SAFETY

Covers the safety problems peculiar to meat packing operations, and also touches on the basic safety subjects: housekeeping, first aid, lifting, ladder safety, and electrical hazards. The film features a "gremlin" character called Axie Dent, and his running battle with a safety-wise superintendent who is trying to explain the basic safety rules to his men. Covers the care and use of knives and meathooks, steel mesh gloves, special machinery, meat trees, how to handle a load. 15 minutes. (Class VIII Film)

WOVEN WITH SAFETY

The safety committee of a large textile mill meets to discuss their over-all accident problem. By the time they break up they're agreed that it's the little things that cause most of the accidents; that they can be stopped if the mill workers will heed the fundamental rules: never clean, repair, or adjust the parts of a machine while it is moving; keep guards in place; keep knives and scissors where they belong; lift properly; get first aid promptly; don't wear loose clothing near machines. 15 minutes. (Class I Film)

JACKHAMMER SAFETY

Illustrates the standard safe practices in drilling and blasting operations. Stresses the importance of keeping the jackhammer in good condition; protective equipment for the operator. Silent filmstrip. (Class II Film)

BUILDING CONSTRUCTION SAFETY

Blasts the old superstition that each story of a building is paid for with the life of a worker. Covers demolition, steel scaffolding, ladders, unguarded floor openings, concrete placement, material hoists, housekeeping. Silent filmstrip. (Class II Film)

SAFE HAULAGE IN COAL MINES

Covers all the safety factors involved in haulage operations. Stresses the importance of car and motor maintenance. Interest is heightened with real accident scenes. Silent filmstrip. (Class II Film)

BLASTING SAFELY IN MINES


Demonstrates the know-how and skill necessary in using explosives. Shows how and where to store explosives—the precautions that must be taken. Silent filmstrip. (Class II Film)

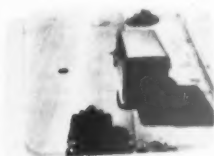
MOTOR TRANSPORTATION

Films



SMOOTH OPERATION

Driving a truck in city traffic needn't be a nerve-fraying ordeal. Not if drivers will make a game of it. Played to the best of their skill—smoothly, efficiently, according to the rules—it can be a source of real satisfaction. The secret is smooth operation—the skillful coordination of driver, vehicle, and traffic. Sudden stops, starts and turns are apt to catch other drivers off guard. Make your moves g-r-a-d-u-a-l-l-y after proper signalling and a quick check of the rear view mirror. A sportsmanlike attitude toward other drivers makes city driving easier, safer—leaves you relaxed and smiling at the end of the day. 16 minutes. (Class I Film) Also 16mm motion version. (Class V Film) 



DEFENSIVE DRIVING

Tells your drivers that preventing accidents is not so much the knack of squeezing out of those tight places as it is the ability to anticipate—to dodge trouble BEFORE they get in it. Defensive driving is mostly common sense. It means: keeping your equipment in safe condition, follow at a safe distance, stop slowly, use hand signals, consideration for others. The film also reminds your drivers that their safe, courteous driving can mean a lot to your company's public relations effort. 20 minutes. (Class I Film)

Coming Soon!

THE PROFESSIONAL SAFE DRIVING SERIES

Here's the complete driver training course you've been waiting for—5 interest-packed films aimed squarely at your experienced drivers. The series is narrated by Wilbur Shaw, three-time winner and now president of the Indianapolis Motor Speedway Corporation, and a sports theme is used throughout. Big name baseball, bowling and golf stars will contrast the fine points of their sports with the skill and finesse the "pro" drivers rely on to maintain their safety records.

SKILL IS YOUR BUSINESS

What it takes to maintain professional driving skill day-after-day; to keep it on tap to meet those unexpected situations.



IF IT HAPPENS

There are three important things to remember if you have an accident: 1. Keep the accident from getting worse—set out flags or flares; get the vehicle off the road. 2. record all the facts—get the name, address, license number of the other driver and the witnesses; make a sketch of the accident with skidmarks and point of collision marked; call the police and tell them exactly what happened. 3. get your vehicle back on the job as soon as possible. 20 minutes. (Class I Film)



P. U. D. DRIVER WINS AGAIN

The story of a typical day in the life of a pick-up and delivery driver—how he resists the temptation to ignore the safety rules. Points out that the real professionals are the best drivers on the road because they check their trucks every morning, they look both ways before entering traffic and at intersections, they stay within the posted speedlimit...go even slower if conditions are bad, make their turns from the proper lanes, follow at safe distances, are courteous to other drivers—even the road-hogs. 20 minutes. (Class I Film)



PILOTS OF THE HIGHWAY

Moves from the first interview, through the driver training program, to the day the new man becomes a full-fledged "pilot of the highway." Here's an excellent indoctrination film that covers all the safety fundamentals; gives your new men the "why" behind your careful training efforts. Covers emergency maintenance, vehicle inspection, I.C.C. speed regulations, road signs, standard hand signals. 20 minutes. (Class I Film)

NINETY-DAY FLASH

Shows how small driving errors, if repeated frequently, lead to faulty habits and inevitably to accidents.

THE CHAMP BECOMES DEAF AND DUMB

The ability to concentrate—shut out distractions—is just as important to pro drivers as it is to pro golfers.

WATCH YOUR HANDICAP

Drivers, like some professional bowlers, handicap themselves through lack of sleep, improper food, irregular health habits.

TAKE A LOOK AT THE ODDS

The right attitude towards safety is the best insurance against accidents; the odds are always in favor of the driver who plays it safe.

These 16mm sound motion pictures will be available in black and white or color. Due date...about April 1.

16 mm Motion Pictures

FOR SAFETY SAKE

An excellent training film for all workers that use portable power tools. Shows how to use, inspect and maintain drills, grinders, saws, and other electric hand tools with emphasis on the basic safety precautions. 15 minutes, all motion. (Class V Film)

To meet the increasing demand for 16mm training films and still stay within new film budget limits, the Council has pioneered the new "simulated" motion picture production technique. After the slidefilm is completed, the motion version can be economically prepared through the skillful blending of motion sequences with the still scenes. The addition of unusual optical effects gives the impression of continuous motion throughout. The fifteen slide-motion films now available are described below.

AN ACCIDENT HAPPENS TO SAM

13 minutes (Class V Film)

See page N-38 for description.

YOU CAN TAKE IT WITH YOU

13 minutes—black & white or color version

Black & white (Class V Film)

Color (Class VI Film)

See page N-38 for description.

A GRAY DAY FOR O'GRADY

13 minutes. (Class V Film)

See page N-18 for description.

PICK YOUR SAFETY TARGET

13 minutes—Black & white or color.

Black & white (Class V Film)

Color (Class VII Film)

See page N-18 for description.

PERSONAL SIDE OF SAFETY Series

Set of five 13 minute films (Class IV Films)

See page N-39 for description.

FREIGHT HANDLING SAFETY

11 minutes (Class V Film)

See page N-41 for description.

CAUSE FOR ALARM

13 minutes (Class V Film)

See page N-41 for description.

STOP THE FIRE THIEF

13 minutes (Class V Film)

See page N-41 for description.

EASY ON THE EYES

15 minutes (Class V Film)

See page N-40 for description.

WHAT'S YOUR SAFETY I.Q.?

15 minutes (Class V Film)

See page N-41 for description.

SMOOTH OPERATION

16 minutes (Class V Film)

See page N-45 for description.

Off-the-Job and Public Safety Films

See Service Guides 2.4, 2.5, and 2.6, or write for complete list.

Rental Films

Rental service is available only within the continental limits of the U.S.A. unless the member agrees to pay airmail postage both ways. Rental limit is two weeks unless special arrangements are made through the Council's Membership Department.

Industrial

THE SAFETY SLEUTH

—accident causes

EYE ACCIDENTS

—eye protection in underground mining

BURNING—THE SAFE WAY

—safe practices, protective equipment for burners

WELDING—THE SAFE WAY

—safety precautions and equipment

DIAGNOSIS DANGER

—hospital safety program

USE AND CARE OF HAND TOOLS

(series of six films; rent singly)

WRENCHES

PLIERS AND SCREWDRIVERS

CHISELS

HAMMERS

PUNCHES, DRIFTS, AND BARS

HACK SAWS

BREATH OF LIFE

—tree-top resuscitation

Motor Transportation

THE OPERATOR AND SAFETY

—city bus operators

THE TRUCK AND THE DRIVER

—city trucks

THEY DRIVE IN SAFETY

—indoctrination film for commercial drivers

IT'S A BIG JOB

—streetcar and city bus operations

CAUTION AT THE CROSS ROADS

—intersection hazards

DANGER IN REVERSE

—how to back safely

TOO CLOSE FOR COMFORT

—following too close

TOO FAST FOR CONDITIONS

—gear speed to road conditions

WRONG SIDE—SUICIDE

—crossing the centerline

WHAT HAPPENED?

—accident reporting

LOOKING FOR TROUBLE

—vehicle maintenance

Rental rate for any of the above films is \$5.00 per week or fraction thereof. User pays return shipping charges.

INDEX AND PRICE LIST

Write for quotations on quantities of 5,000 or more. Non-member prices are double these member prices, except items marked with asterisk (*).

MEMBER PRICES

	1 to 9	10 to 99	100 to 999	1,000 to Page #
Accident Analysis Chart, pads of 50, ea.	\$ 1.05	\$ 1.00	\$ 0.90	\$ 0.85 10
Accident Facts*, ea.	.75	.65	.55	.50 11
Accident Prevention Manual, ea.	9.00	8.50	8.00	8.00 5
Section Reprints, ea.	.75	.60	.50	.45 5
Accident Rates Pamphlets, ea.	.35	.35	.29	.29 10
Accident Record Forms, Industrial				
IS-1A, IS-3, IS-4, IS-5A, IS-7, IS-8, ea.	.06	.023	.017	.015 10
IS-6 (pads of 100), ea.	.35	.35	.35	.35 12
Administrative Units—AA-1	23.00	—	—	—
A-1	17.50	—	—	—
B-1	14.00	—	—	—
C-1	8.50	—	—	—
A-2	18.00	—	—	—
B-2	11.00	—	—	—
C-2	7.00	—	—	—
B-11	14.00	—	—	—
American Standard Safety Code for Building Construction, ea.	1.15	1.15	1.15	1.15 11
Aren't People Funny?, ea.	.12	.07	.06	.045 25
5,000 to 9,999, \$0.04; 10,000 to 19,999, \$0.035; 20,000 or more, \$0.03.	18.50	16.00	16.00	—
Award Pennant—Honor or Merit, ea.	.50	.50	.50	.50 15
Additional Stars, ea.	.17	.12	.08	.06 24
Be Fire Wise, ea.	.75	.60	.58	.53 37
5,000 to 9,999, \$0.05; 10,000 to 19,999, \$0.045; 20,000 or more, \$0.04	13.20	12.60	12.00	11.40 11
Committee Badge, ea.	25.00	23.00	23.00	—
Construction Job Manual, ea.	.69	.58	.44	.40 35
DSS Pennants, ea.	.75	.60	.50	.47 35
Dash Cards, sets ea.	.17	.13	.08	.07 5
Data Sheets, any selection, ea.	19.50	18.00	17.50	17.50
Current Set, including binders, ea.	3.00	3.00	3.00	3.00 24
Binders, 1 1/2", ea.	.20	.10	.08	.06 24
Deadly Ideas, ea.	5.00 to 9,999, \$0.055; 10,000 to 19,999, \$0.05; 20,000 or more, \$0.045	.12	.07	.058 36
Decalcomanias, any selection, ea.	.17	.10	.08	.058 35
Defensive Driving, Bus or Truck, ea.	.12	.09	.08	.07 5
Detail Sheets, any selection, ea.	10.20	9.50	9.00	9.00 27
Current set including binder, ea.	.12	.07	.06	.045 27
Down Time, ea.	5.00 to 9,999, \$0.04; 10,000 to 19,999, \$0.035; 20,000 or more, \$0.03.	.52	.40	.29 34
Driver Letter, subscription, ea.	7.50	7.25	7.00	— 34
Driver Memo Pads, set of 48 pads, ea.	.10	.06	.045	.035 26
Driver's Lucky Seven, ea.	5.00 to 9,999, \$0.03; 10,000 to 19,999, \$0.028; 20,000 or more, \$0.026.	.06	.02	.017 9
Engineering Studies—see Special Releases	.12	.07	.06	.045 24
Experts Don't Shid, ea.	5.00 to 9,999, \$0.04; 10,000 to 19,999, \$0.035; 20,000 or more, \$0.03	.06	.02	.017 34
Fall Guy, The, ea.	.12	.07	.06	.045 24

	Single copy	2 to 9 copies	10 or more	Rental or Preview
Class I Films, ea.	14.50	13.70	12.90	5.00
Class II Films, ea.	32.50	31.00	30.00	5.00
Class III Films, ea.	40.00	38.00	37.00	5.00
Class IV Films, ea.	53.00	50.00	47.00	5.00
Class V Films, ea.	95.00	91.00	87.00	—
Class VI Films, ea.	100.00	95.00	90.00	5.00
Class VII Films, ea.	9.00	8.50	8.00	5.00
Class VIII Films, ea.	115.00	109.00	103.00	7.50† 19
Human Factors in Safety, set of 6 films, ea.	70.00	65.00	63.00	7.50 39
Personal Side of Safety, 35mm set (5 films)* ea.	190.00	180.00	175.00	10.00 39
16mm set (5 films)* ea.				
Safety Management for Foremen, set of 10 films, ea.	115.00	109.00	103.00	10.00† 20
Speaking of Safety, set of 6 films, ea.	115.00	109.00	103.00	7.50† 21
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Any 9 films in series	167.00			
Any 8 films in series	149.00			
Any 7 films in series	130.00			
Any 6 films in series	115.00			
Any 5 films in series	98.00			

* For Preview only. Rental rates shown are per week or fraction thereof. User pays return charges. User pays shipping charges. Both ways on Free Loan films.

	1 to 9	10 to 99	100 to 999	1,000 to Page #
First Aid Reminders, set of 8, ea.	.33	.24	.16	.12 27
Any selection, ea.	.07	.05	.035	.026 37
Fleet Safety Manual, ea.	8.50	8.00	8.00	8.00 11
Individual Parts, ea.	.85	.75	.70	.63 24
Follow the Leader, ea.	.10	.06	.045	.035 24
5,000 to 9,999, \$0.03; 10,000 to 19,999, \$0.028; 20,000 or more, \$0.026				
Foremen's 5 Minute Safety Talks, Book 1, 11 & III, ea.	1.70	1.50	1.45	1.35 22
For Experts Only, ea.	.23	.21	.17	.15 34
Green Cross Electrocs, 1/2", 5/8", 3/4", 1", ea.	.75	.69	.69	.69 37
1 1/2", ea.	1.38	1.20	1.20	1.20 190
Green Cross Flag*, ea.	2.00	1.90	1.90	1.90 15
Have Fun! ea.	9.00	8.50	8.00	8.00 26
5,000 to 9,999, \$0.03; 10,000 to 19,999, \$0.028; 20,000 or more, \$0.026	.10	.06	.045	.035 26
Heave-Ho! ea.	.12	.07	.06	.045 25
5,000 to 9,999, \$0.04; 10,000 to 19,999, \$0.035; 20,000 or more, \$0.03	.25	.19	.16	.14 35
Here Are The Facts*, ea.				
5,000 to 25,000, \$1.25	.17	.12	.08	.06 26
Hold Everything* ea.	10.00	—	—	— 11
5,000 to 9,999, \$0.05; 10,000 to 19,999, \$0.045; 20,000 or more, \$0.04	.17	.10	.08	.058 35
Hospital Safety Service*, ea.	.69	.63	.58	.58 11
How To Be A Smooth Operator, ea.	.10	.06	.045	.035 25
How To Make the Safety Speech, ea.	.10	.06	.045	.035 25
How To Prevent Falls, ea.	.29	.23	.21	.18 24
5,000 to 9,999, \$0.03; 10,000 to 19,999, \$0.028; 20,000 or more, \$0.026	.58	.52	.46	.46 11
I Just Gave My Seat to a Lady, ea.				
Industrial Safety & Health Bibliography, ea.				

	1 to 9	10 to 99	100 to 999	1,000 to Page #
Industrial Supervisor, subscription, ea.	1.80	1.70	1.65	1.60 17
Subscription billed monthly, ea.	.18	.16	.145	.135 17
In the Pink, ea.	.17	.09	.07	.05 27
5,000 to 9,999, \$.045; 10,000 to 19,999, \$.04; 20,000 or more, \$.035				
It Pays to Dress Well, ea.	.12	.07	.06	.045 24
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03				
Jumbo Posters—see Posters				
K. O. Dirt & Disorder, ea.	.12	.07	.06	.045 24
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03				
Nan With the Badge, The, ea.	.60	.45	.40	.35 25
National Safety News, subscription, ea.	5.50	5.00	4.60	4.40 3
Non-member prices, ea.	7.50	6.90	6.30	6.00 3
(Add \$1.00 for foreign, except Canada & Pan American Union)				
News Letters, subscription, ea.	1.15	1.00	.85	.85 11
No Accident Award Pins				
Bronze (1 to 4 years), ea.	.35	.30	.25	.20 37
Silver Plated (5 to 9 years), ea.	.37	.32	.27	.22 37
Gold Plated (10 to 40 years), ea.	.40	.35	.30	.25 37
(Add 20% Fed. Excise Tax on silver & gold)				
Off The Job Safety Kit, ea.	1.00	—	—	— 11
Payroll Enclosures, 1st 100 sheets	11.50	—	—	— 37
Additional 100 sheets, ea.	1.95	—	—	— 37
Personalized Committee Badge, ea. (plus die charges)				
Photocopies, any selection, ea.	.12	.07	.06	.045 33
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03				
Poster Directory, ea.	.50	.40	.35	.35 28
Poster Electros, ea.	3.45	3.45	3.15	3.15 37
Poster Frames, "A" size, ea.	1.15	1.00	.90	.90 37
"B" size, ea.	1.70	1.40	1.15	1.15 37
POSTERS				
"A" size, any selection, ea.	.09	.05	.046	.038 28
5,000 to 9,999, \$.034; 10,000 to 19,999, \$.032; 20,000 or more, \$.030				
"A" size, all one poster, ea.	.09	.05	.046	.036 28
5,000 to 9,999, \$.032; 10,000 to 19,999, \$.029; 20,000 or more, \$.026				
"B" size, any selection, ea.	.18	.15	.138	.114 28
5,000 to 9,999, \$.099; 10,000 to 19,999, \$.088; 20,000 or more, \$.078				
"B" size, all one poster, ea.	.18	.15	.138	.108 28
5,000 to 9,999, \$.087; 10,000 to 19,999, \$.076; 20,000 or more, \$.066				
"C" size, ea.	.36	.30	.275	.20 28
Safety Pays the Smaller Business, ea.	3.60	3.00	2.75	2.00 28
Jumbo Posters, subscription, ea.				
(12 Posters), ea.	49.00	46.00	43.50	43.50 29
subscription, billed monthly, ea.	4.90	4.60	4.35	4.35 29
Motor Transportation Poster Sets				
1 to 4 sets, ea.	\$6.48			
5 to 49 sets, ea.	\$4.80			
50 to 999 sets, ea.	\$4.41			
Psychology of Safety in Supervision, ea.	1.05	1.00	.90	.85 16
Public Safety, subscription, ea.	4.00	3.80	3.45	3.45 10
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Rush is On, The, ea.				
5,000 to 9,999, \$.03; 10,000 to 19,999, \$.028; 20,000 or more, \$.026				
Safe at Home, ea.	.17	.09	.07	.05 26
5,000 to 9,999, \$.045; 10,000 to 19,999, \$.04; 20,000 or more, \$.035				
Safe Driver—same prices as Safe Worker				
Safe Driver Award				
Safe Driver Award Banner, ea.	17.50	16.00	16.00	— 37
Safe Driver Award Shoulder Patch, ea.	.50	.40	.35	.30 34
Safe Practices Pamphlets, any selection, ea.	.45	.40	.35	.33 5
Set in binder, ea.	19.50	18.00	17.50	17.50 5
Binder only, ea.	2.50	—	—	— 5
Safe Railroad, subscription (6 issues), ea.	.44	.39	.29	.25 23
5,000 to 9,999, \$.24; 10,000 to 19,999, \$.23; 20,000 or more, \$.22				
Subscription, billed bi-monthly, ea.	.09	.08	.053	.044 23
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.039; 20,000 or more, \$.037				
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5,000 to 9,999, \$.048; 10,000 to 19,999, \$.046; 20,000 or more, \$.044				
Safe Worker, Subscription (12 issues), ea.	.70	.66	.50	.42 23
5,000 to 9,999, \$.40; 10,000 to 19,999, \$.37; 20,000 or more, \$.35				
Subscription billed monthly, ea.	.07	.066	.046	.036 23
5,000 to 9,999, \$.034; 10,000 to 19,999, \$.032; 20,000 or more, \$.03				
Single issues, ea.	.07	.066	.05	.042 23
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.037; 20,000 or more, \$.035				
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Safety Contest Trophy, ea.	25.00	23.00	22.00	22.00 37
Safety Desk Flag, ea.	1.00	.70	.60	.60 15
Safetygraphs, complete, ea.	11.55	10.90	10.55	10.30 30
Safetygraph, only, any selection, ea.	8.00	7.60	7.25	7.00 30
Safetygraph Estels only, ea.	3.55	3.30	3.30	3.30 30
Safety in Foremanship, sets, ea.	1.95	1.70	1.50	1.45 22
Safety Inspection Checklist, pads of 50, ea.	1.05	1.00	.90	.85 10
Safety Instruction Cards, any selection, ea.	.05	.025	.019	.017 5
Complete set with file case & guides, ea.	12.65	12.10	11.55	11.00 5
Industrial Set including file case and guides, ea.	8.25	7.70	7.15	6.60 5
File case & guides only, ea.	2.20	2.10	2.00	2.00 5
Safety Lapel Buttons, ea.	.44	.33	.29	.23 37
(Add 20% Fed. Excise Tax)				
Safetyman's Library, ea.	65.00	—	—	— 4
Safety Manual Reprints, ea.	.75	.60	.50	.45 5
Safety Patch, ea.	.50	.35	.25	.20 37
Safety Pays the Smaller Business, ea.	.20	.20	.16	.14 17
Safety Reprints—see Special Releases				
Safety Round the Clock, ea.	.10	.06	.045	.035 26
5,000 to 9,999, \$.03; 10,000 to 19,999, \$.028; 20,000 or more, \$.026				
Safety Talks for Construction & Maintenance Foremen, ea.	1.70	1.50	1.45	1.35 22
Safety Training Institute				
Fundamentals of Industrial Safety, \$60.00				13
Safety Management Techniques, \$75.00				

	1 to 9	10 to 99	100 to 999	1,000 to 4,999	Page #
Safety Zoo, ea.	.20	.16	.12	.09	24
5,000 to 9,999, \$.08; 10,000 to 19,999, \$.075; 20,000 or more, \$.07					
Ship Shape, ea.	.12	.07	.06	.045	24
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03					
Shop Safety, ea.	.29	.23	.17	.16	24
So Help Me! ea.	.17	.09	.07	.05	24
5,000 to 9,999, \$.045; 10,000 to 19,999, \$.04; 20,000 or more, \$.035					
Speaking Straight, Thinking Straight, ea.	.29	.23	.23	.23	9
Special Releases— 1 or 2 pages, ea.	.10	.04	.03	.03	11
4 pages, ea.	.10	.07	.06	.05	
6 pages, ea.	.15	.09	.08	.07	
8 pages, ea.	.15	.11	.09	.08	
10 pages, ea.	.20	.13	.11	.09	
12 pages, ea.	.20	.15	.13	.11	
16 pages, ea.	.20	.17	.14	.12	
18 pages, ea.	.25	.19	.15	.13	
Steps to Safety, ea.	.12	.07	.06	.045	25
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03					
Still Waggin', ea.	.12	.07	.06	.045	27
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03					
Transactions, sets, ea.	6.90	6.30	5.70	5.70	10
What Can I Do? ea.	.08	.05	.035	.025	27
5,000 to 9,999, \$.022; 10,000 to 19,999, \$.02; 20,000 or more, \$.018					
Whip Your Weight in Wildcats, ea.	.10	.06	.045	.035	27
5,000 to 9,999, \$.03; 10,000 to 19,999, \$.028; 20,000 or more, \$.026					
Wise Bird Follows the Rules, A, ea.	.12	.07	.06	.045	24
5,000 to 9,999, \$.04; 10,000 to 19,999, \$.035; 20,000 or more, \$.03					
You Factor in Accident Causes, The, Bus or Truck, ea.	.17	.10	.08	.058	35
You 10,000 Mile Living Room,* ea.	.10	.04	.03	.025	26
5,000 to 9,999, \$.022; 10,000 to 19,999, \$.021; 20,000 or more, \$.02					

CONDITIONS AND TERMS

Prices shown in this catalog are effective February 15, 1953, payable U. S. Funds. They are subject to change without notice.

All prices shown are based on a single order for delivery in one shipment to one destination (one shipment per month on annual subscriptions). Quantities are not cumulative over a period of time, or for a number of locations, to obtain quantity prices.

On a single order requesting shipment to more than one location, the price per copy shall be the listed price in the group bracket in which each shipment falls. (Example: Order requesting shipment of 10 copies to each of 19 locations. The total cost of the order will be—19 (locations) \times 10 (copies) \times price per copy in each group (10 to 99).

All prices unless otherwise shown are pre-paid destination within the United States and Canada and Pan American Union. Customs charges will not be paid by the Council. An additional charge equal to 4% of the order will be made on shipment to foreign countries.

Terms of payment on all invoices are 30 day net, except quantity calendar purchases. Annual subscriptions payable in advance.

Remittance should accompany all orders totalling one dollar or less to conserve labor and speed up handling of the order.

Single copies of monthly publications—12 issues annually—can be purchased at 1/10 the annual subscription rate.

Special sorting or packaging, trimming to special sizes or other special handling of publications will, wherever possible, be performed as requested. Service charges will be made for the cost of such work.

IMPRINTING CHARGES

In general, imprinting is limited to three lines. On large posters, imprinting is limited to the right hand half of the lower margin. It is understood that a quantity within 4% above or below the quantity requested will constitute an acceptable delivery on any order requiring imprinting.

Imprinting at time of publication.

Safe Driver, Safe Worker, and all other publications imprinted at time of publication (except calendars), regardless of quantity—per lot or per month on monthly publications \$3.50

On monthly publications, the per lot-per month charge of \$3.50 is effective only when the imprint remains the same during the period of subscription.

Imprinting after publication:

Small posters (8 1/2" x 11 1/2")—1st 1,000 or fraction \$4.50
additional 1,000 or fraction 3.50

Large posters (17" x 23")—1st 1,000 or fraction \$10.00
additional 1,000 or fraction 7.50

Other publications imprinted after publication, where space permits
1st 1,000 or fraction \$7.00
additional 1,000 or fraction 3.00

Posters presented in four-colors or without a white border cannot be imprinted. Imprinting can be done on all Council publications (outside front and back covers only) provided there is sufficient space and a light background color.

NATIONAL SAFETY COUNCIL

425 North Michigan Ave., Chicago 11, Ill.



Safety Playing Cards

54 SAFETY REMINDERS

...full-color miniature posters promoting safety both on and off the job. They cover attitudes, lifting, first aid, falls, fire prevention, guarding, traffic ... a balanced selection that tells and retells the principles of safety throughout many, many months of use by all the members of your employees' families.

Gilt edge, plastic coated, top-grade durable decks that can be used for all 52-card games—bridge, canasta, rummy, poker. The backs of the cards carry the Green Cross for Safety emblem on dark green or cinnamon colored backgrounds. Packed in handsome green and gold foil boxes, cellophane wrapped.

IMPRINTING—

Box covers may be imprinted with up to 3 lines in gold lettering. There will be an initial charge of \$5.00 per order, plus \$.03 per box imprinted.

MEMBER PRICES

(U.S.A. & Possessions)

	1 to 9	10 to 99	100 to 999	1000 to 4999	5000 or more
Single decks, each	\$1.00	\$0.85	\$0.80	\$0.75	\$0.72
Double decks, each	1.90	1.65	1.55	1.45	1.39

Non-members add 25% to the above prices.

Safety Incentives

spark new interest in your program

Awards, contest prizes and useful reminders are good safety. Many National Safety Council members have been using them with great success in recent years, developing and maintaining a high level of interest in their safety programs.

The Safety Incentives shown here are typical of the wide selection provided through the Council, suited to every occasion and every budget.

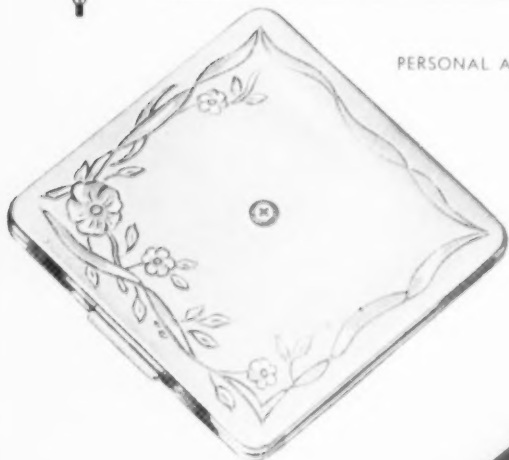
Many were designed to National Safety Council specifications. All are distinctive, attractive, useful, and will be received with deep pride because they are management's recognition of a job well done.

For full details see SERVICE GUIDE 9.1, or write to the Membership Department.

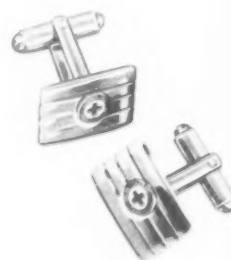


- ★ outstanding safety records
- ★ inter-departmental safety contests
- ★ completion of safety courses
- ★ company Christmas remembrances
- ★ safety suggestion awards
- ★ safety meeting door prizes
- ★ safety banquet souvenirs
- ★ safety contest prizes
- ★ outstanding service to safety
- ★ safety committeemen awards
- ★ company picnic and party prizes
- ★ driver awards
- ★ safety meeting attendance

PERSONAL ACCESSORIES



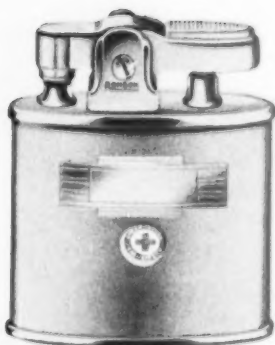
PARKER PENS
& PENCILS



GRUEN WATCHES



RONSON
LIGHTERS



double the Scope of your Safety Program!

include the

**OFF-THE-JOB HALF of your workers' lives
and their families, too!**

Less than one-half your workers' day is spent under the influence of your job safety program. The rest is spent where nearly 3 out of 5 worker accidents occur—in traffic, recreation and around their homes!

That's why so many companies give their workers the annual



NATIONAL SAFETY CALENDAR

year after year!



It's a home study course in safety for workers, their wives and kids. Twelve heart-warming safety picture-stories, and twelve pages of 'round-the-clock safety tips—daily safety reminders that work both on and off the job. It's the one training aid you can put in their homes—that works for you day after day for a solid year!

The way those "SAVE-A-LIFE-LINE" lim-erick contests pull in entries shows that everyone, from Junior to Grandma, is learning more safety—and liking it!

Plan now to let the 1954 Safety Calendar help double the scope of your safety program. The earlier you order, the lower the cost. Write to the Membership Department for a free sample calendar and the full details.



Accidents in 1952

Total fatalities up 1 per cent over 1951, all classifications but occupational show increases

THERE WERE approximately 15,000 deaths from occupational accidents in 1952, or 1,000 less than the 1951 total of 16,000.

The largest decrease, 300, occurred in the manufacturing industry. Reductions of 200 were recorded for the mining and quarrying, and agriculture industries. The construction, trade, and service industries each had 100 fewer deaths than in 1951. Transportation, and public utilities had the same number of fatalities as in the previous year.

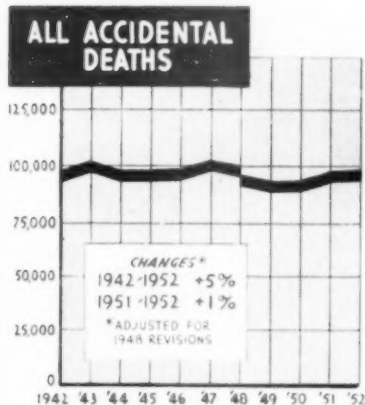
Nonfatal injuries decreased to an estimated total of 2,000,000 in 1952, compared with 2,100,000 in 1951, a 5 per cent reduction. Permanent impairments numbered about 80,000, or 10,000 fewer than in 1951.

Employment in all industries during 1952 was about the same as in 1951. In manufacturing alone, employment decreased slightly.

Accident rates cannot be computed at this time on a national basis, but preliminary information indicates that the all-industry frequency rate probably was somewhat lower than in 1951. Nonfatal injuries, as noted above, decreased about 5 per cent. The number of workers, and average hours worked, remained at the 1951 level. While present measurements of exposure are incomplete, a small decrease in the rate seems certain.

Accident Costs

Wage loss, medical expense, and the overhead cost of insurance for occupational accidents in 1952 amounted to about \$1,350,000,000. The so-called "indirect" costs totalled about \$1,300,000,000, including such items as time lost by workers other than the injured, interference with production schedules,



property damage, and partial disability due to accidents which did not result in lost time. Total costs thus were about \$2,650,000,000.

Off-the-Job Accidents

In addition to the occupational accidents, the nation's productive capacity was lowered by off-the-job accidents of workers. The 1952 death toll from these accidents was approximately 34,500 and the injury total about 2,600,000. Accidents to workers, on and off the job, thus totalled 49,500 deaths and 4,600,000 injuries. The time lost during the year from these accidents, and from less serious injuries and indirect losses, amounted to approximately 340,000,000 man-days.

Industrial Commission Records

Deaths reported to Industrial Commissions in 24 states during 1952 totalled 8,506, only 26 more than were reported

in 1951. Increases of 1 to 36 per cent were recorded in 14 states, and decreases of 1 to 17 per cent in 9 states. One state reported no change from 1951.

	1952	1951	Per Cent Change
Totals for 24 states	8,506	8,480	0
Alabama	119	111	7
Arizona	91	67	36
California	1,130	981	15
Connecticut	65	51	27
Florida (10 mos.)	138	153	10
Georgia	132	137	4
Idaho	89	80	11
Illinois (11 mos.)	334	374	11
Kansas	56	84	17
Kentucky	117	91	29
Massachusetts	473	467	1
Missouri	191	97	4
Nebraska (11 mos.)	76	65	17
New York	1,679	1,629	3
North Carolina	131	163	20
Ohio	1,221	1,180	3
Oregon (10 mos.)	156	129	5
Pennsylvania	820	941	13
South Carolina	80	75	7
Texas	591	649	9
Virginia (11 mos.)	217	217	0
Washington	205	246	17
West Virginia	305	334	9
Wisconsin	158	159	1

Railroad Accidents

Deaths of railroad employees on duty, except those occurring more than 24 hours after the injury, numbered 230 in the first 8 months of 1952, a decrease of 8 per cent from 1951. Injuries with more than three days' disability numbered 13,258, or 14 per cent fewer than in 1951.

Coal Mine Accidents

Deaths in coal mine accidents in 1952 totalled 541, or 31 per cent less than in 1951, according to a preliminary report of the U.S. Bureau of Mines. This is one of the lowest annual death totals on record. Incomplete information indicates that falls of roof or face continued to be the outstanding type of accident, followed by haulage accidents and gas or dust explosions.

Fire Loss

The 1952 total of property destroyed by fire was \$785,000,000, according to the National Board of Fire Underwriters. This was 7 per cent more than the comparable 1951 total. In 1951, over half of the loss from building fires was in industrial and business establishments.

THE NATIONAL ACCIDENT FATALITY TOLL

	1952	1951	Per Cent Change
All Accidents	96,000	95,000	+ 1
Motor-vehicle	38,000	37,300	+ 2
Public non-motor-vehicle	16,000	15,000	+ 7
Home	29,500	29,000	+ 2
Occupational	15,000	16,000	- 6

Note: The motor-vehicle totals include some deaths also included in the occupational and home totals. This duplication amounted to about 2,500 deaths in each year. All figures are National Safety Council estimates.

For a Successful Poster Program



**your
safety
starts**

HERE!

The Jumbo poster, issued monthly, is designed for outdoor use and is available to members on annual subscription but is not stocked. Its actual size is 9' 11" by 11' 8".

PLAN YOUR SELECTIONS . . .

THE 1953 Directory of Occupational Safety Posters has been mailed to all National Safety Council industrial members. Additional copies are available at 50 cents each—write to Membership Dept., N.S.C.

The Directory contains miniatures of 756 posters—top-notch selections on a great variety of subjects. All posters shown will be stocked during 1953.

Posters miniaturized on this and the following pages are NEW—shown for the first time. Excepting the Jumbo poster (left, upper), all will be in stock throughout 1953. Those posters shown in one color on the following two pages are actually printed in two or more colors.

For a more successful poster program: first, make your selections from the brand new posters shown on these pages and also from the hundreds of illustrations in the 1953 Directory.



9793-A

8½x11½

This new four color poster is illustrative of the 72 four color posters shown in the 1953 Poster Directory.



9864-C

25x38

Above new "C" poster, issued monthly, is indicative of the other two color posters—shown in one color on the following pages and in the 1953 Poster Directory.

Electrotypes of poster miniatures on this page are not available, nor can payroll inserts be supplied.

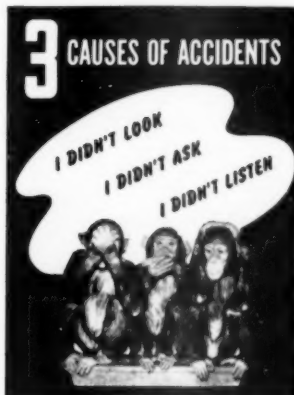
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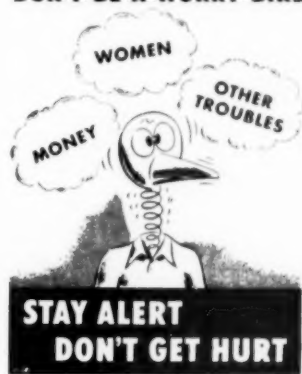


NATIONAL SAFETY COUNCIL

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DON'T BE A WORRY BIRD



NATIONAL SAFETY COUNCIL

9798-B

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9808-A

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NATIONAL SAFETY COUNCIL

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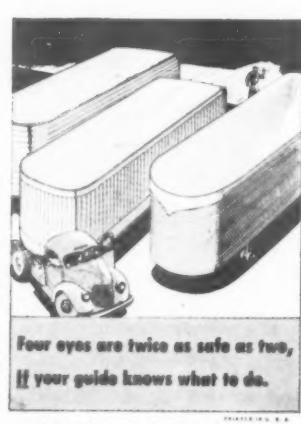
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